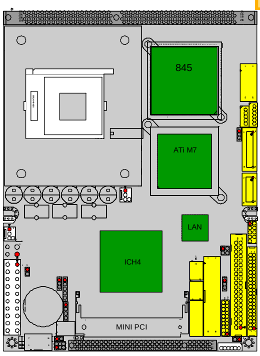
EmCORE-i6415VL

User's Manual



5.25" Intel Socket 478 Pentium 4 CPU Single Board Computer with one DDR DIMM socket, LCD/CRT, one Mini PCI, one PCI slot, single LAN (10/100 or 1000 Mbps), 4 COM ports and 4 USB 2.0 ports

CONTEC CO., LTD. makes no commitment to update or keep current the information contained in this document. The information in this document is subject to change without notice.

All relevant issues have been considered in the preparation of this document. Should you notice an omission or any questionable item in this document, please feel free to notify CONTEC CO., LTD.

Regardless of the foregoing statement, CONTEC assumes no responsibility for any errors that may appear in this document nor for results obtained by the user as a result of using this product.

Trademarks

Intel, Celeron and Pentium are registered trademarks of Intel Corporation.

MS, Microsoft, Windows and Windows NT are trademarks of Microsoft Corporation. Other brand and product names are trademarks of their respective holder.

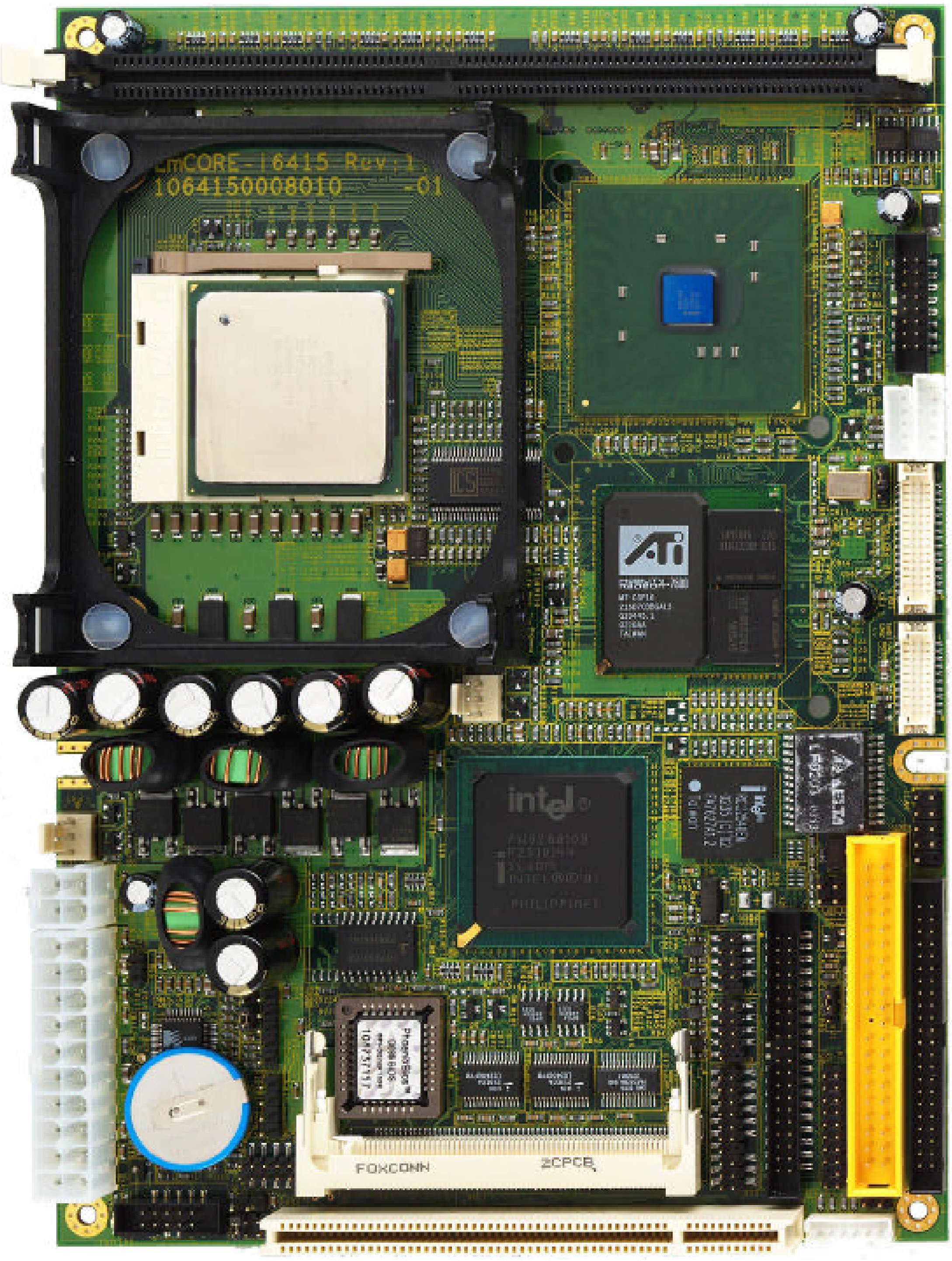
All Other product names or trademarks are properties of their respective owners.

Table of Contents

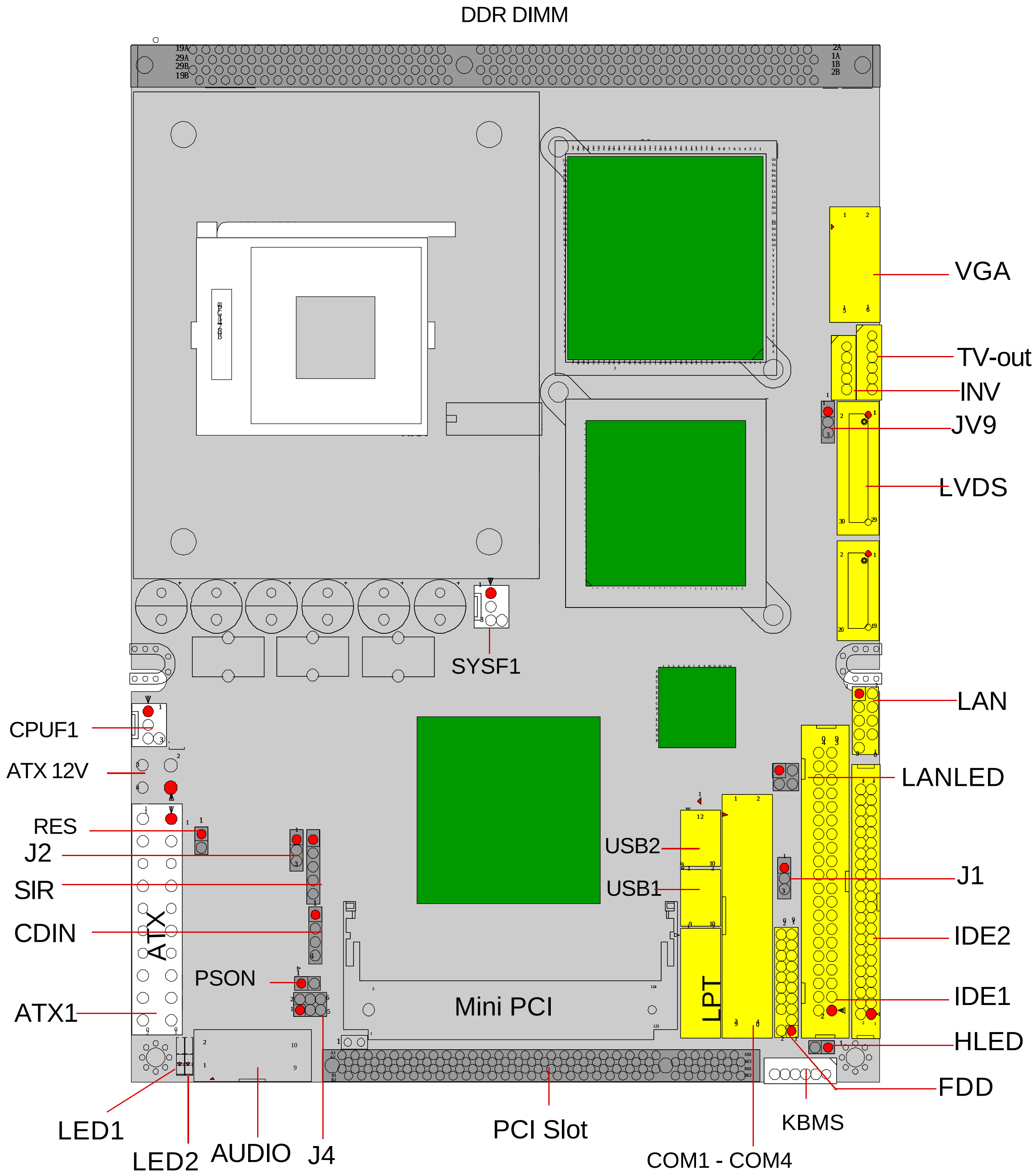
Specifications

Item	Specification
CPU (Option)	Intel(R) Pentium(R) 4 Processor 2.4G - 3.06GHz (FSB 400M/533MHz), PGA
Cache	Built in CPU
Processor socket	Socket 478
Memory (Option)	One 184-pin DIMM socket, PC2100/2700 DDR SDRAM for up to 1GB
Chipset	Intel(R) 845GV+ICH4
BIOS	Award BIOS
VGA	Built in Intel(R) 845GV, Dual View Analog RGB I/F x 1 (16 pin mini-box header connector x 1), LVDS(18/24bit) I/F x 1 (30 pin-header connector x 1), TV-out(NTSC/PAL) I/F x 1 (6 pin mini-box header connector x 1)
Keyboard/Mouse connector	One PS/2 Keyboard/Mouse connector (Bundled the 2 in 1 mini-DIN)
Serial I/F	16550 UART 40-pin header connector x 4 (RS-232C x 3, RS-232C/422A/485 x 1) Baud rate: 50 - 115,200bps (programmable)
Parallel I/F	One high-speed parallel port, support SPP/EPP/ECP mode, One 20 pin-header connector
On board expansion bus	One Mini PCI socket (Type III), One PCI bus
LAN Port	100BASE-TX/10BASE-T, Intel ICH4 integrated controller One box-header 10-pin connector
IDE I/F	One EIDE port (support Ultra DMA100) One box-header 44-pin connector (support Ultra DMA33) Up to four IDE devices
SATA I/F	None
FDD I/F	3.5 inch 2mode I/F, One 20 pin-header connector
Compact Flash Slot	None
SSD Socket	None
USB Port	4ch USB 2.0 complaint ports, Two 10 pin-header connectors
IrDA	IrDA 1.1 complaint port, One 5 pin-header connector
RAID	None
Audio	AC97 CODEC, One box-header 10-pin connector for speaker out, line in, microphone in.
Watchdog Timer	Software programmable 255 levels (1 - 255sec). Reset occurrence at the time of time up.
General-purpose I/F	None
Hardware Monitor	Monitoring of the temperature of CPU and board, power supply voltage, and fan speed
RTC/CMOS	The backup time of the Lithium battery is over 6 years at 25°C. The clock is accurate ±3 minutes/month at 25°C.
Power Management	Power management setup via BIOS
Bus specification / Size (mm)	None / 203(L) x 145(H)
DC Power Requirements	+3.3V ±5% +5VDC ±5% +12VDC ±5% +5VSB(Stand by) ±5%(Only when using the ATX power supply)
Power supply specifications (Max.)	Pentium 4 2.8GHz + 512M DDR SDRAM +3.3VDC 2.6A +5VDC 1.8A +12VDC 4.56A +5VSB(Stand by) 0.25A(Only when using the ATX power supply)
Operating temperature / Operating Humidity	0 - 60°C (Depends on the specification of CPU and heat sink.) /10 - 90%RH (No condensation)
Storage temperature	-20 - 80°C
Floating dust particles	Not to be excessive
Corrosive gases	None
Weight	360g
Operating System Support	Windows XP Professional Windows 2000 Professional

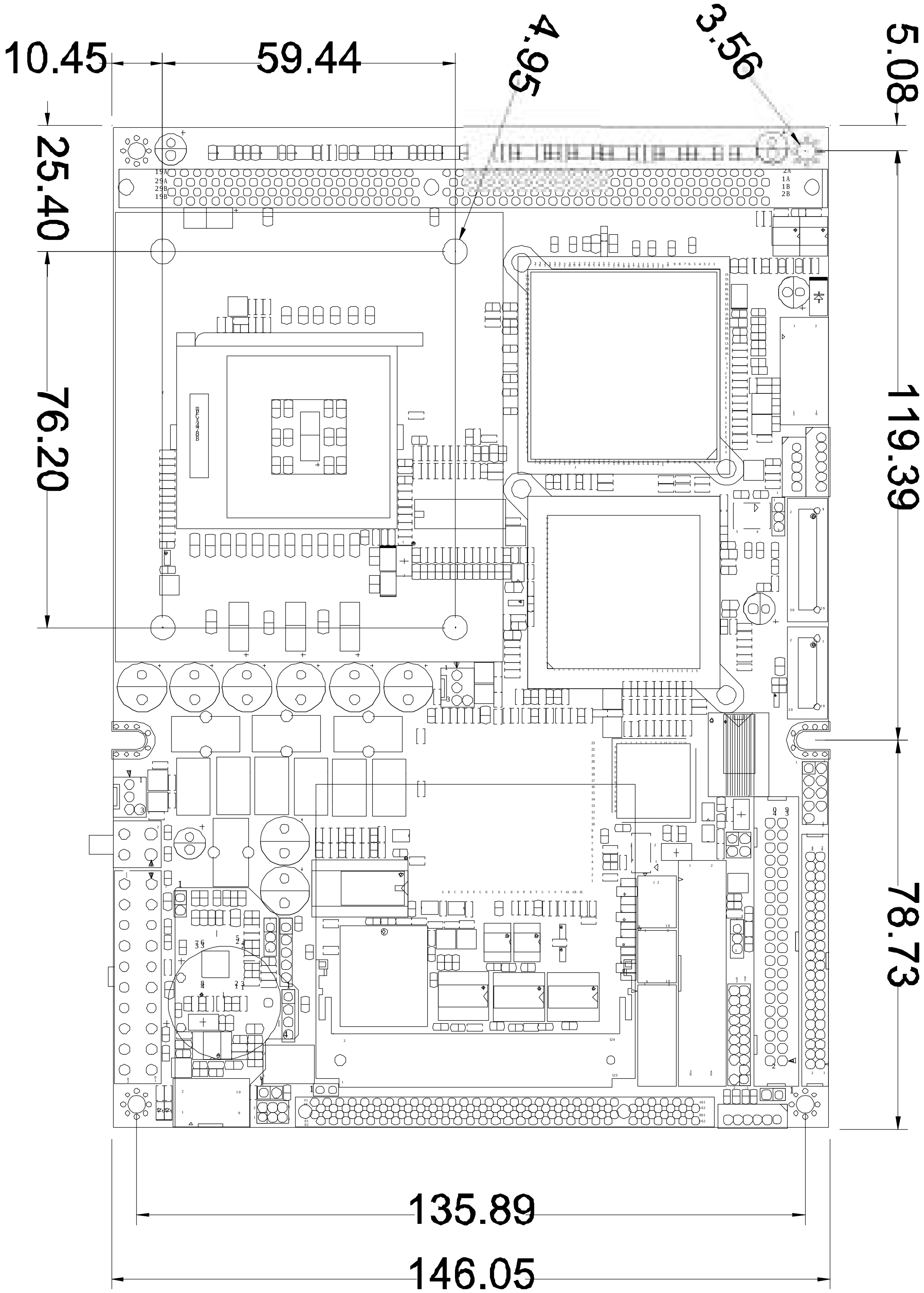
Board Image



Board Layout



Board Dimension



Jumper/Connector Quick Reference

Jumpers Lable	Function
J1	Clear CMOS
J2	Watchdog Output
J4	COM2 RS-232C / 422A / 485 Selection
JV9	LVDS LCD power select

Jumper/Connector Quick Reference

Connectors

Lable	Function
VGA	VGA Display Connector
LVDS	LVDS LCD Connector
IDE1	Primary IDE Connector
IDE2	Secondary IDE Connector
USB1	USB Port 0,1
USB2	USB Port 2,3
AUDIO	Audio Interface Port
SIR	Infrared (IR) Connector
KBMS	Keyboard and PS/2 Mouse
FDD	Floppy Drive Connector
LAN	10/100/1000 M LAN1 Connector
LPT1	Parallel Port
COM1-4	RS-232C Serial Port (COM1 - 4)
LED1	power standby LED (Orange)
LED2	power-on/suspend LED (Green)
CDIN	CD-ROM Audio Input
PSON	Power-on button
ATX1	ATX power connector
ATX12V	ATX12V
TV	TV-out connector
INV	LCD Inverter connector
LANLED	LAN LED connector
CPUF1	CPU Fan connector
SYSF1	System Fan connector
RES	Reset Switch
HLED	IDE Activity LED

CMOS Jumper Settings

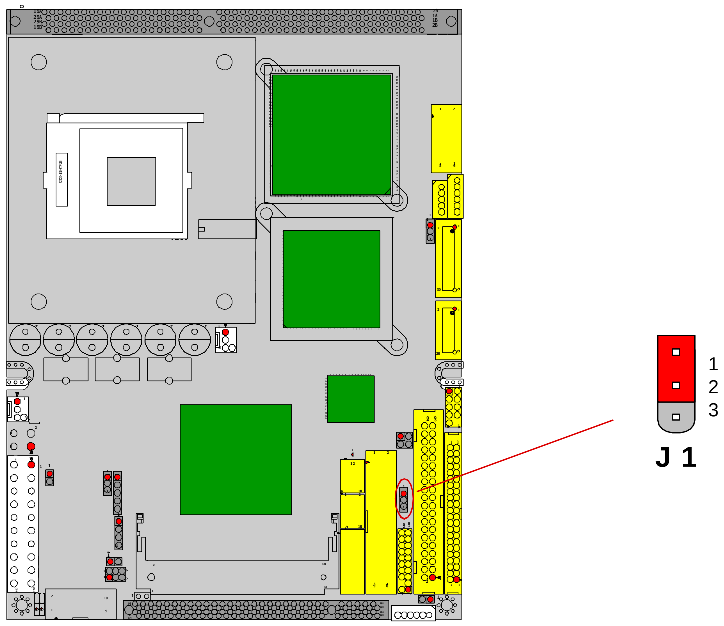
CMOS Operation (J1)

Type : J1: onboard 3-pin header

If the EmCORE-i6415 refuses to boot due to inappropriate CMOS settings here is how to proceed to clear (reset) the CMOS to its default values.

CMOS Setup (J1)	J1
Normal Operation	1-2
Clear CMOS	2-3

default setting 1-2 ON



Watchdog Timer

Watchdog Output (J2)

The onboard watchdog timer can be disable by jumper setting or enable for either reboot by system RESET or invoking an NMI (Non-Maskable Interrupt)

Even if enabled by jumper setting upon boot the watchdog timer is always inactive. To initialize or refresh the watchdog timer writing of port 44h is sufficient. To disable the watchdog time read port 44h.

Status	**Action**
Enable/refresh the Watchdog Timer	I/O Write 044h
Disable the Watchdog Timer.	I/O Read 044h

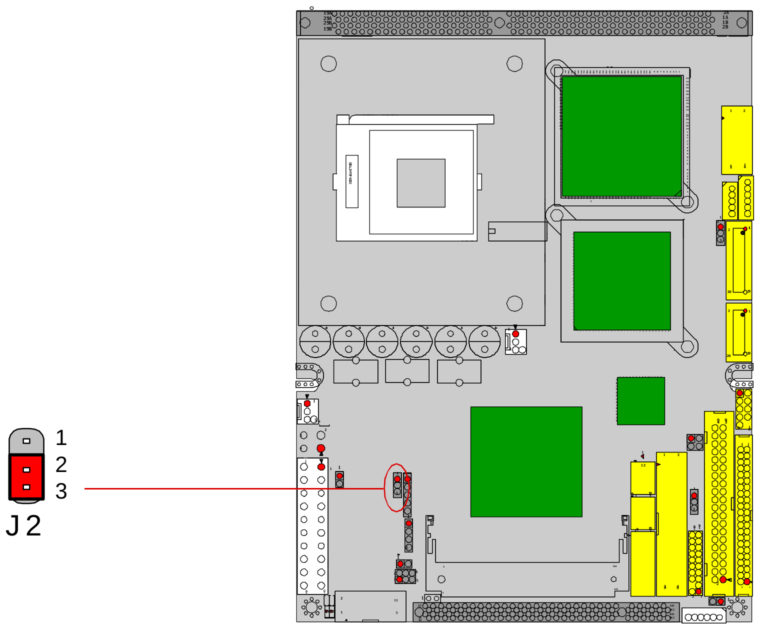
After the watchdog timer has been initialized by writing port 044h, it has to be strobed at preconfigured intervals to keep it from issuing a RESET or NMI.

The watchdog timer timeout intervals are set by software programming.

Mode Setting

Watchdog Mode	**J2**
Enabled for System Reset	2-3

default setting



Timeout Values

Timout values are programmed. The watchdog timer supports 254 steps.
use the table on the next page to find the hexidecimal value that needs to be passed on to get the correct timer interval. Look subsequntly at the program

example how to pass the value to the watchdog timer.

Timeout Table

Level	Value	Seconds	Level	Value	Seconds	Level	Value	Seconds
1	1	1	2	2	2	3	3	3
4	4	4	5	5	5	6	6	6
7	7	7	8	8	8	9	9	9
10	A	10	11	B	11	12	C	12
13	D	13	14	E	14	15	F	15
16	10	16	17	11	17	18	12	18
19	13	19	20	14	20	21	15	21
22	16	22	23	17	23	24	18	24
25	19	25	26	1A	26	27	1B	27
28	1C	28	29	1D	29	30	1E	30
31	1F	31	32	20	32	33	21	33
34	22	34	35	23	35	36	24	36
37	25	37	38	26	38	39	27	39
40	28	40	41	29	41	42	2A	42
43	2B	43	44	2C	44	45	2D	45
46	2E	46	47	2F	47	48	30	48
49	31	49	50	32	50	51	33	51
52	34	52	53	35	53	54	36	54
55	37	55	56	38	56	57	39	57
58	3A	58	59	3B	59	60	3C	60
61	3D	61	62	3E	62	63	3F	63
64	40	64	65	41	65	66	42	66
67	43	67	68	44	68	69	45	69
70	46	70	71	47	71	72	48	72
73	49	73	74	4A	74	75	4B	75
76	4C	76	77	4D	77	78	4E	78
79	4F	79	80	50	80	81	51	81
82	52	82	83	53	83	84	54	84
85	55	85	86	56	86	87	57	87
88	58	88	89	59	89	90	5A	90
91	5B	91	92	5C	92	93	5D	93
94	5E	94	95	5F	95	96	60	96
97	61	97	98	62	98	99	63	99
100	64	100	101	65	101	102	66	102
103	67	103	104	68	104	105	69	105
106	6A	106	107	6B	107	108	6C	108
109	6D	109	110	6E	110	111	6F	111
112	70	112	113	71	113	114	72	114
115	73	115	116	74	116	117	75	117
118	76	118	119	77	119	120	78	120
121	79	121	122	7A	122	123	7B	123

Timeout Table

Level	Value	Seconds	Level	Value	Seconds	Level	Value	Seconds
124	7C	124	125	7D	125	126	7E	126
127	7F	127	128	80	128	129	81	129
130	82	130	131	83	131	132	84	132
133	85	133	134	86	134	135	87	135
136	88	136	137	89	137	138	8A	138
139	8B	139	140	8C	140	141	8D	141
142	8E	142	143	8F	143	144	90	144
145	91	145	146	92	146	147	93	147
148	94	148	149	95	149	150	96	150
151	97	151	152	98	152	153	99	153
154	9A	154	155	9B	155	156	9C	156
157	9D	157	158	9E	158	159	9F	159
160	A0	160	161	A1	161	162	A2	162
163	A3	163	164	A4	164	165	A5	165
166	A6	166	167	A7	167	168	A8	168
169	A9	169	170	AA	170	171	AB	171
172	AC	172	173	AD	173	174	AE	174
175	AF	175	176	B0	176	177	B1	177
178	B2	178	179	B3	179	180	B4	180
181	B5	181	182	B6	182	183	B7	183
184	B8	184	185	B9	185	186	BA	186
187	BB	187	188	BC	188	189	BD	189
190	BE	190	191	BF	191	192	C0	192
193	C1	193	194	C2	194	195	C3	195
196	C4	196	197	C5	197	198	C6	198
199	C7	199	200	C8	200	201	C9	201
202	CA	202	203	CB	203	204	CC	204
205	CD	205	206	CE	206	207	CF	207
208	D0	208	209	D1	209	210	D2	210
211	D3	211	212	D4	212	213	D5	213
214	D6	214	215	D7	215	216	D8	216
217	D9	217	218	DA	218	219	DB	219
220	DC	220	221	DD	221	222	DE	222
223	DF	223	224	E0	224	225	E1	225
226	E2	226	227	E3	227	228	E4	228
229	E5	229	230	E6	230	231	E7	231
232	E8	232	233	E9	233	234	EA	234
235	EB	235	236	EC	236	237	ED	237
238	EE	238	239	EF	239	240	F0	240
241	F1	241	242	F2	242	243	F3	243
244	F4	244	245	F5	245	246	F6	246
247	F7	247	248	F8	248	249	F9	249
250	FA	250	251	FB	251	252	FC	252
253	FD	253						

Programming Example

The following program is an examples of how to enable, disable and refresh the Watchdog timer:

```
WDT_EN_RF       equu    044h

WDT_DIS         equu    044h

WT_Enable  push AX              ; Save AX,DX
           push DX
           mov DX,WDT_EN_RF     ; Enable Timer
           mov AX,INTERVAL ; Set Timeout Value
           out DX,AX
           pop DX               ; Restore DX,AX
           pop AX
           ret

WT_Refresh push AX              ; Save AX,DX
           push DX
           mov DX,WDT_EN_RF     ; Refresh Timer
           mov AX,INTERVAL ; Set Timout Value
           out DX,AX
           pop DX               ; Restore DX,AX
           pop AX
           ret

WT_Disable push AX              ; Save AX,DX
           push DX
           mov DX,WDT_DIS  ; Disable Timer
           in AX,DX
           pop DX               ; Restore DX,AX
           pop AX
           ret

WT_Disable push AX              ; save AX,DX
           push DX
           mov DX,WDT_DIS  ; Disable Timer
           in AX,DX
           pop DX               ; restore DX,AX
           pop AX
           ret
```

Serial Port Selection (RS-232C/422A/485)

RS-232C/422A/485 Mode select (J4)

Type : J4: onboard 6-pin(2*3) header

RS-422A/485 Mode on COM2

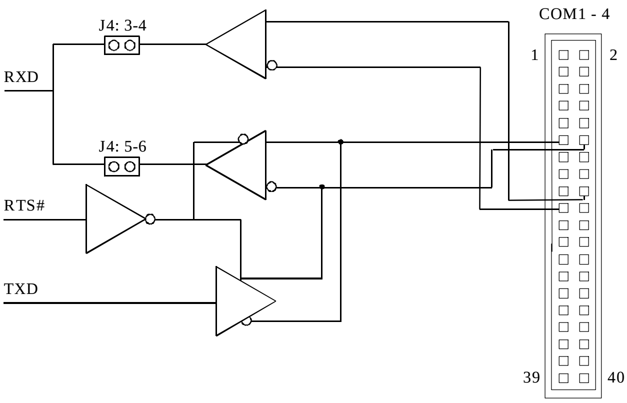
The onboard COM2 port can be configured to operate in RS-422A or RS-485 modes. RS-422A modes differ in the way RX/TX is being handled. Jumper J4 switches between RS-232C or RS-422A/485 mode. All of the RS-232C/422A/485 modes are available on COM2.

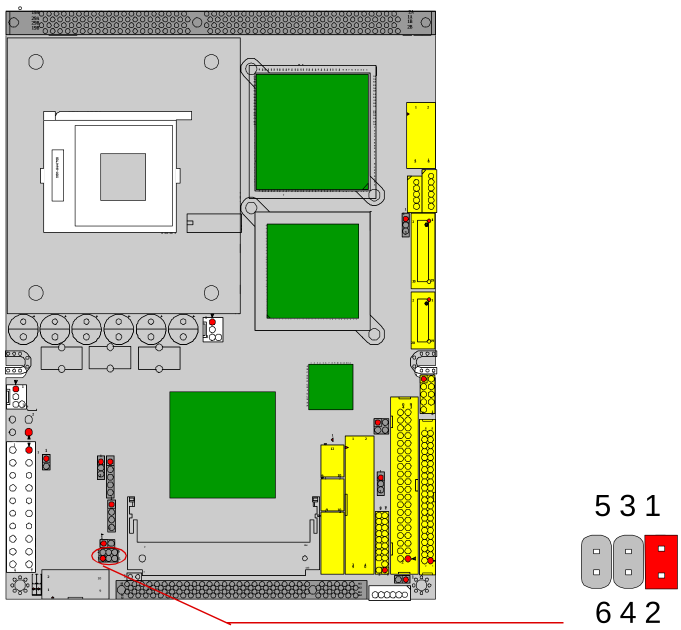
J4 Selection	1-2	3-4	5-6
RS-232C	ON	OFF	OFF
RS-422A	OFF	ON	OFF
RS-485	OFF	OFF	ON

default setting RS-232C

COM2

Pin :	RS-232C	RS-422A	RS-485
11 :	DCD	Tx+	data+
12 :	RXD	Tx-	data-
18 :	CTS	Rx+	x
19 :	RI	Rx-	x



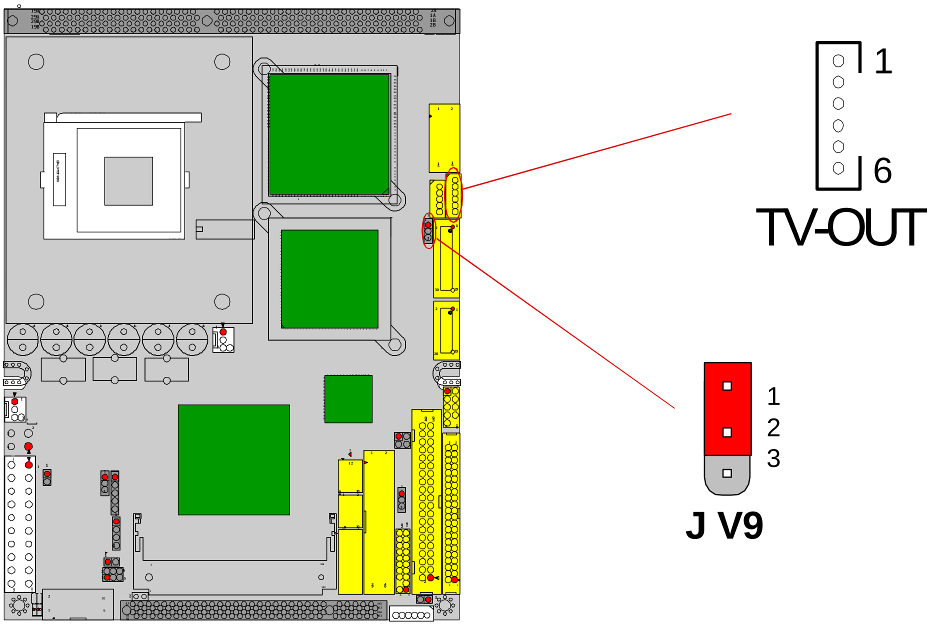


LVDS LCD Power Selection

Type : JV9: onboard 3-pin header

The voltage of LCD panel could be selected by JV9 in 5V or 3.3V.

Mode	JV9
3.3V	1-2
5V	2-3
default setting	3.3V



TV-out Connector

Connector : TV Connector

Type: Onboard 6-pin wafer

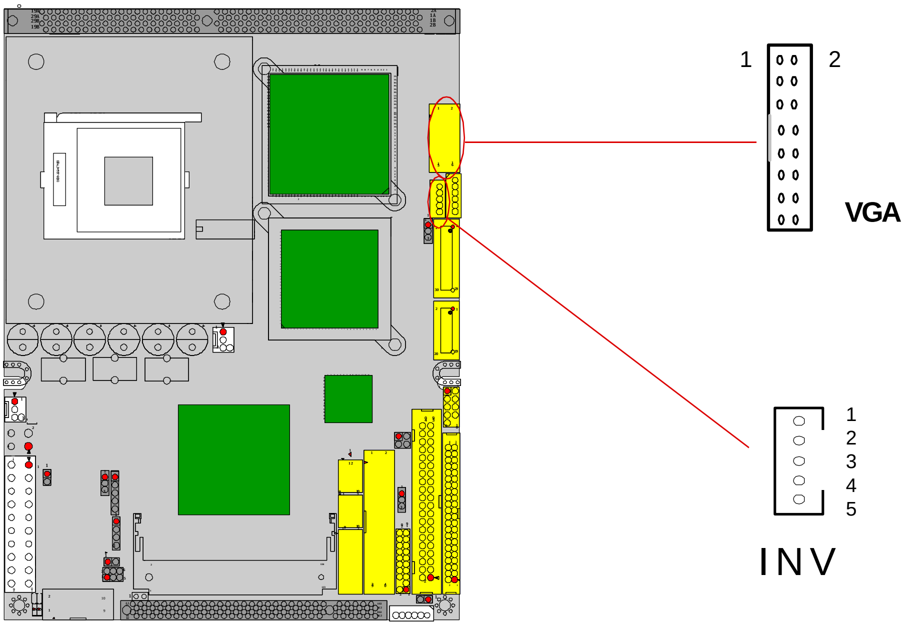
PIN	Description
1	Composite Video
2	GND
3	S-Video Y
4	GND
5	S-Video C
6	GND

VGA Connector

Connector : VGA Connector

Type: Onboard 16-pin mini boxheader

Pin	Description	Pin	Description	Pin	Description
1	RED	6	GND	11	NC
2	GREEN	7	GND	12	VDDAT
3	BLUE	8	GND	13	HSYNC
4	NC	9	Vcc	14	VSYNC
5	GND	10	GND	15	VDCLK
16	NC				



INV Connector

Connector : LCD Inverter connector

Type : Onboard 5-pin wafer

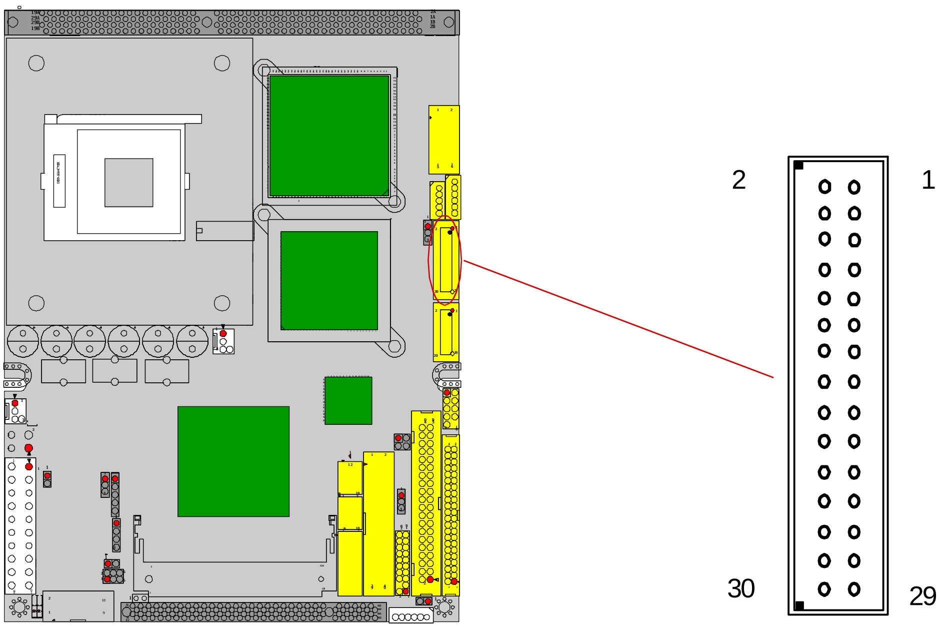
Pin	Description	Pin	Description
1	+12 V	2	GND
3	on/off	4	brightness control
5	GND		

LVDS LCD Connector

Connector : LVDS LCD Connector

Type : onboard 30-pin header

Pin	Signal	Pin	Signal
1	VDD	2	VDD
3	TX1CLK+	4	TX2CLK+
5	TX1CLK-	6	TX2CLK-
7	GND	8	GND
9	TX1D0+	10	TX2D0+
11	TX1D0-	12	TX2D0-
13	GND	14	GND
15	TX1D1+	16	TX2D1+
17	TX1D1-	18	TX2D1-
19	GND	20	GND
21	TX1D2+	22	TX2D2+
23	TX1D2-	24	TX2D2-
25	GND	26	GND
27	TX1D3+	28	TX2D3+
29	TX1D3-	30	TX2D3-



USB1 / USB2 Connector

Connector : USB connector

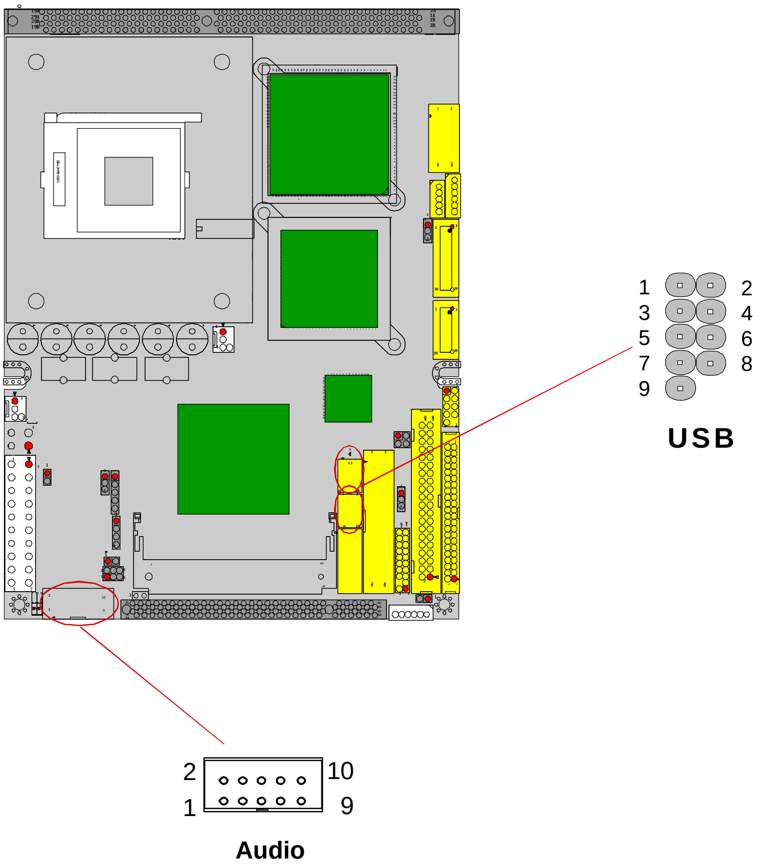
Type:onboard Two 9-pin box headers

Pin	Description	Pin	Description
1	VCC	2	VCC
3	DATA-	4	DATA-
5	DATA+	6	DATA+
7	GND	8	GND
9	GND		

Audio Interface

Connector : **Audio**
Type : Onboard 10-pin header

Pin	Description	Pin	Description
1	LINE IN LEFT	2	LINE IN RIGHT
3	GND	4	GND
5	MIC	6	NC
7	GND	8	GND
9	SPEAKER LEFT	10	SPEAKER RIGHT

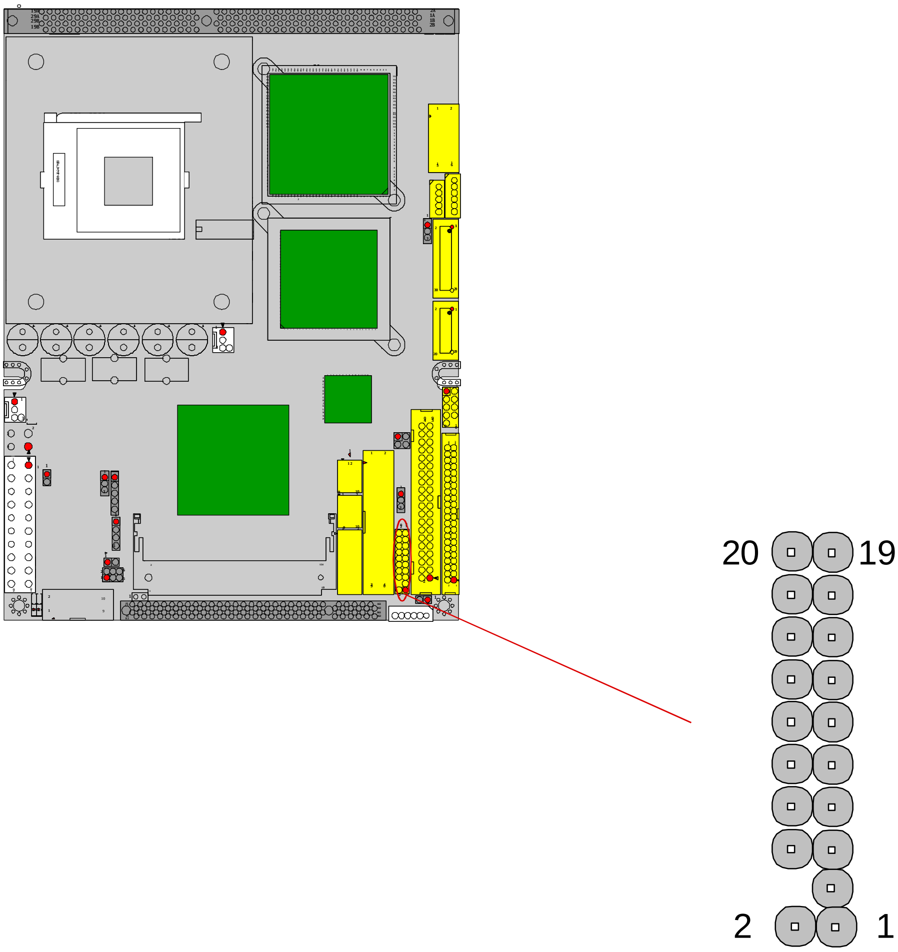


FDD Connector

Connector : FDD Connector

Type : Onboard 20-pin header

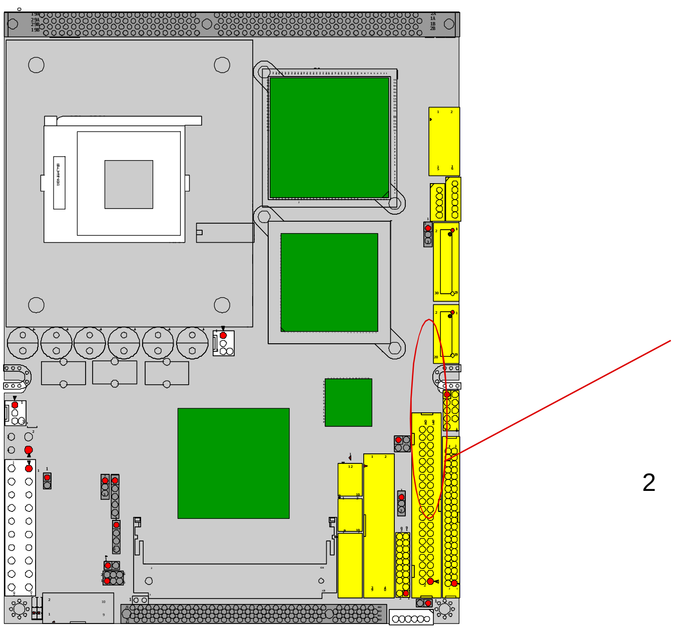
Pin	Description	Pin	Description
1	GND	2	Drive density select 0
3	GND	4	NC (Key)
5	GND	6	Drive density select 1
7	#Write data	8	#Index
9	#Write gate	10	#Motor enable A
11	#Track 0	12	#Driver select B
13	#Write protect	14	#Driver select A
15	#Read data	16	#Motor enable B
17	#Head select	18	#Direction
19	#Disk change	20	#Step

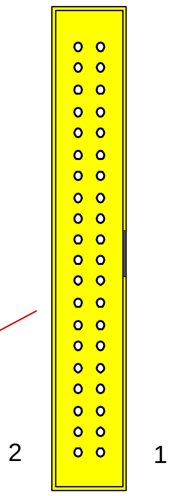


Enhanced IDE Connector

Connector : **IDE1**
Type : Two onboard 40-pin box headers, primary and secondary IDE

Pin	Description	Pin	Description
1	#RESET	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	GND	20	NC/(Vcc)
21	REQ	22	GND
23	#IOW	24	GND
25	#IOR	26	GND
27	#IORDY	28	IDESEL
29	#DACK	30	GND
31	IRQ	32	NC (-IOCS16)
33	ADDR1	34	CBLID
35	ADDR0	36	ADDR2
37	#CS1	38	#CS3(#HD SELET1)
39	#ACT	40	GND

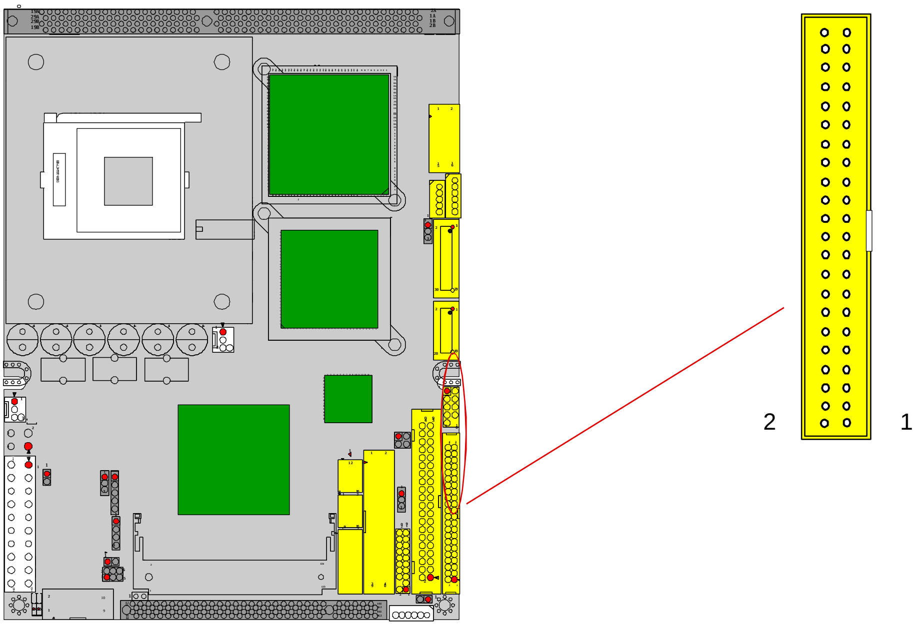




Enhanced IDE Connector

Connector : **IDE2**
Type : One onboard 44-pin box headers, primary IDE

Pin	Description	Pin	Description
1	#RESET	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	GND	20	NC
21	REQ	22	GND
23	#IOW	24	GND
25	#IOR	26	GND
27	#IORDY	28	IDESEL
29	#DACK	30	GND
31	IRQ	32	NC (-IOCS16)
33	ADDR1	34	CBLID
35	ADDR0	36	ADDR2
37	#CS0	38	#CS1(#HD SELET1)
39	#ACT	40	GND
41	Vcc	42	Vcc
43	GND	44	NC

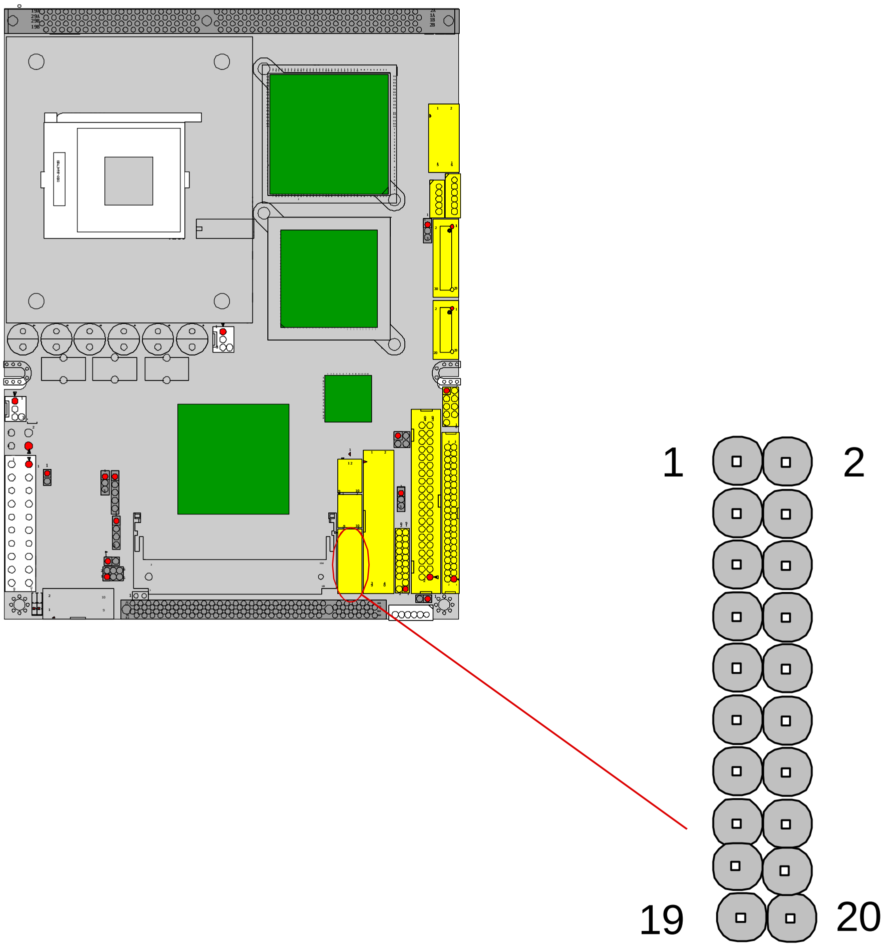


LPT1

Connector : LPT Connector

Type : Onboard 20-pin header

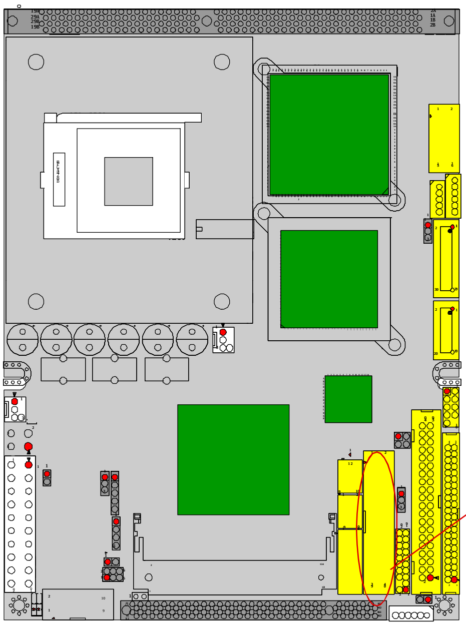
Pin	Description	Pin	Description
1	#STROBE	2	#Auto feed
3	Data 0	4	#Error
5	1	6	#Initialize
7	2	8	#Select Input
9	3	10	GND
11	4	12	GND
13	5	14	NC (KEY)
15	6	16	Busy
17	7	18	Paper Empty
19	#Acknowledge	20	Select

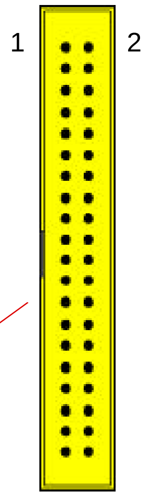


COM 1 - 4

Connector : RS-232C/422A/485 serial connector
Type : Onboard 40-pin min-box header

	Pin	Description	Pin	Description
COM1	1	DCD1	2	RXD1
	3	TXD1	4	DTR1
	5	GND	6	DSR1
	7	RTS1	8	CTS1
	9	RI1	10	N.C.
COM2	11	DCD2(RS-422A TX+ / RS-485 data+)	12	RXD2(RS-422A TX- / RS-485 data-)
	13	TXD2	14	DTR2
	15	GND	16	DSR2
	17	RTS2	18	CTS2(RS-422A RX+)
	19	RI2(RS-422A RX-)	20	N.C.
COM3	21	DCD3	22	RXD3
	23	TXD3	24	DTR3
	25	GND	26	DSR3
	27	RTS2	28	CTS2
	29	RI2	30	N.C.
COM4	31	DCD4	32	RXD4
	33	TXD4	34	DTR4
	35	GND	36	DSR4
	37	RTS4	38	CTS4
	39	RI	40	N.C.



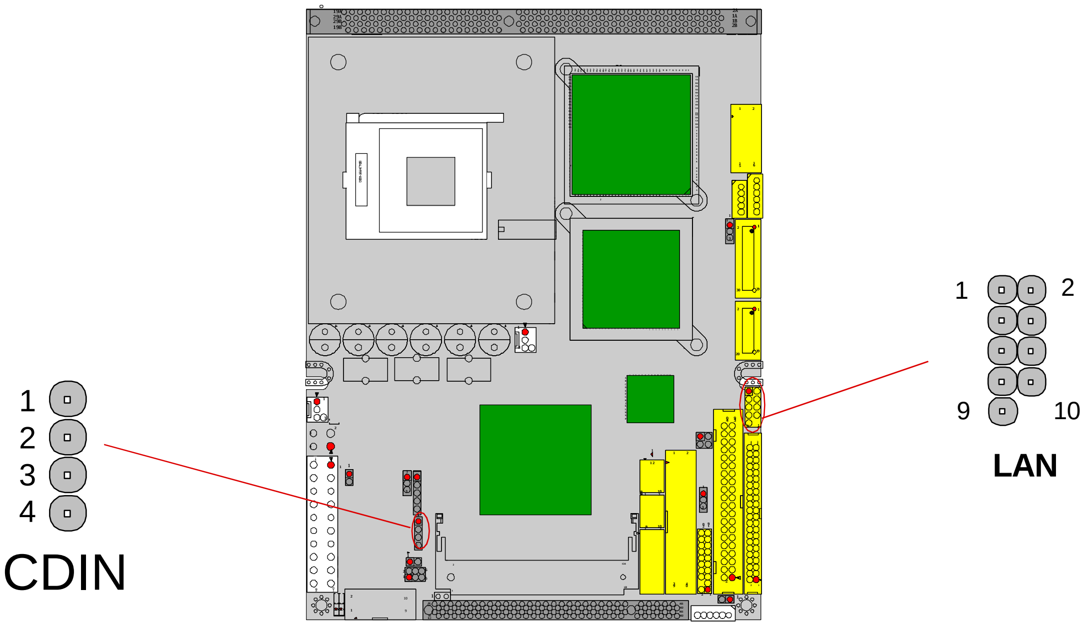


LAN Connector

Connector : LAN Connector

Type : onboard 9-pin header

Pin	Description	Pin	Description
1	TX1+	2	TX1-
3	RX1+	4	RX2+
5	RX2-	6	RX1-
7	TX2+	8	TX2-
9	NC	10	Key



CDIN Connector

Connector : CD-ROM Audio Input

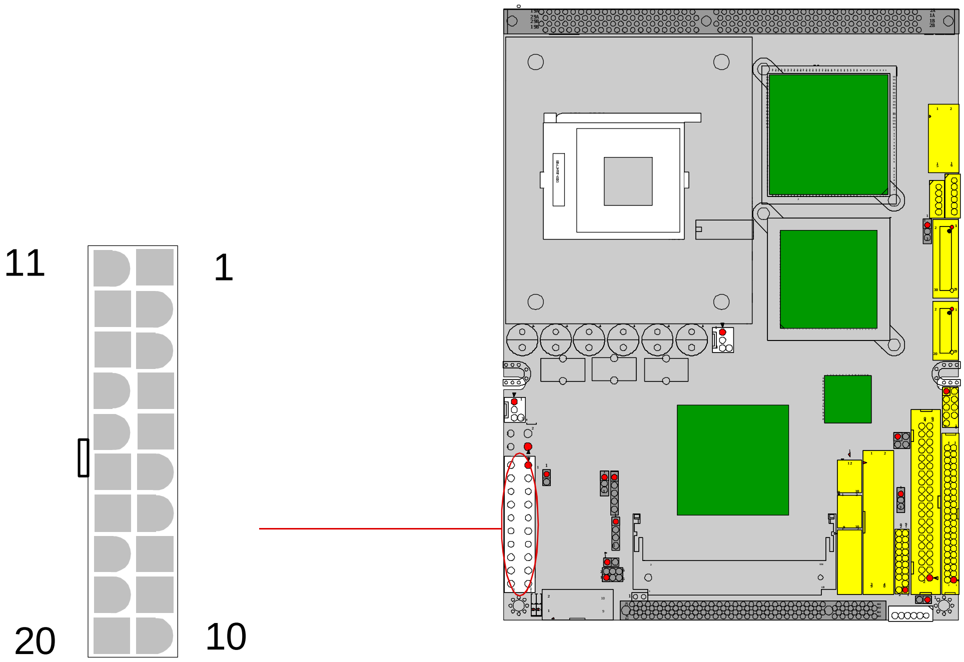
Type : onboard 4-pin header

Pin	Description	Pin	Description
1	CD Left	2	GND
3	GND	4	CD Right

ATX Power Connector

Connector : **ATX1**
Type : 20-pin onboard ATX Connetor

Pin	Description	Pin	Descripition
1	+3.3V	2	+3.3V
3	GND	4	+5.0V
5	GND	6	+5.0V
7	GND	8	PWR_OK
9	+5.0VSB	10	+12V
11	+3.3V	12	-12.0V
13	GND	14	PS_ON#
15	GND	16	GND
17	GND	18	-5.0V
19	+5.0V	20	+5.0V

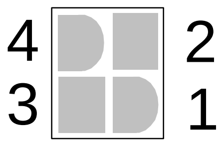


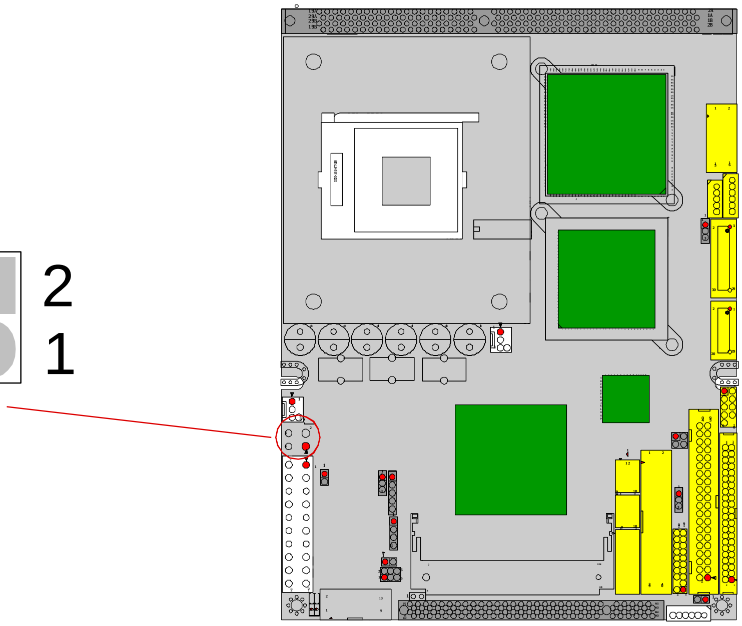
ATX 12V Connector

Connector : ATX12V

Type : 4-pin Onboard ATX12V Connector

Pin	Description
1	GND
2	GND
3	+12V
4	+12V



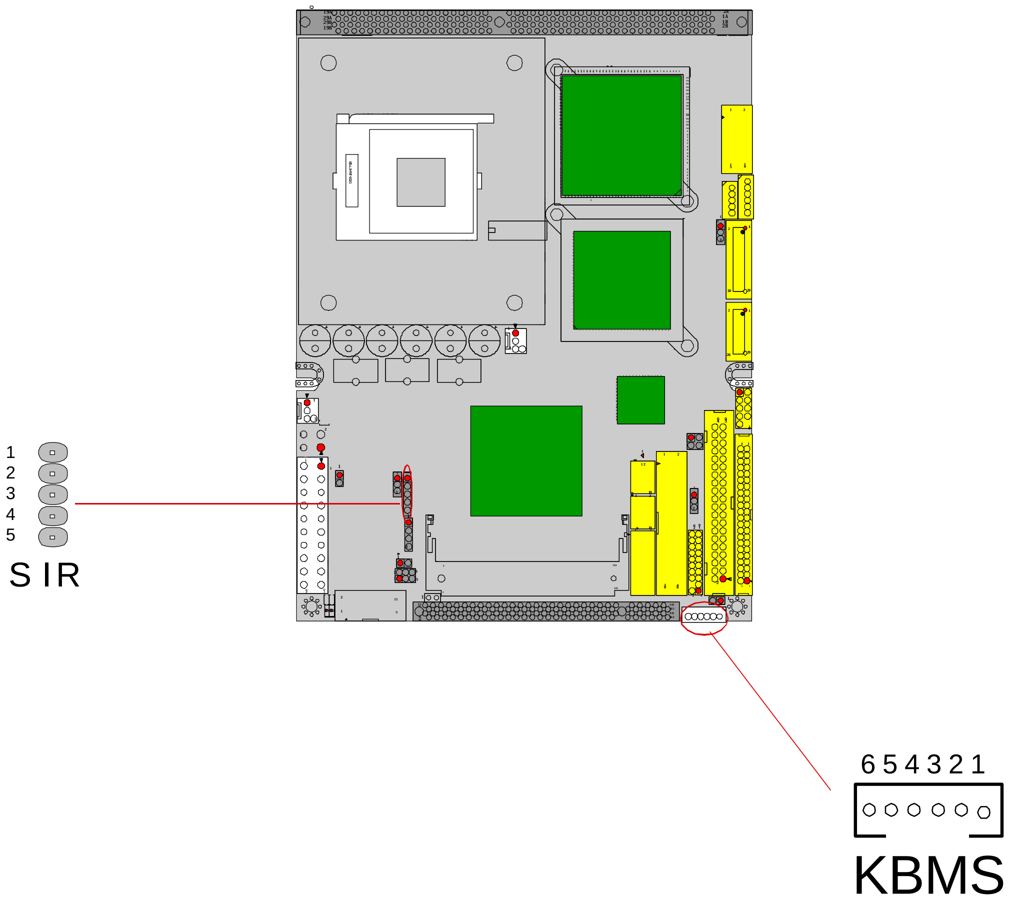


Infrared (IR) Connector

Connector : **SIR**

Type : SIR1: onboard 5-pin header

Pin	Description	Pin	Description
1	Vcc	2	NC
3	IRRX	4	GND
5	IRTX		



Keyboard & PS/2 Mouse

Connector : **KBMS**

Type : KBM2: onboard 6-pin wafer

Pin	Description	Pin	Description
1	KB_DATA	2	GND
3	MS_DATA	4	KB_CLK
5	+5V	6	MS_CLK

Connector : **PSON (Power-on Push Button)**
Type : onboard 2-pin header

Pin	Description
1	PS-ON
2	+5VSB (Standby)

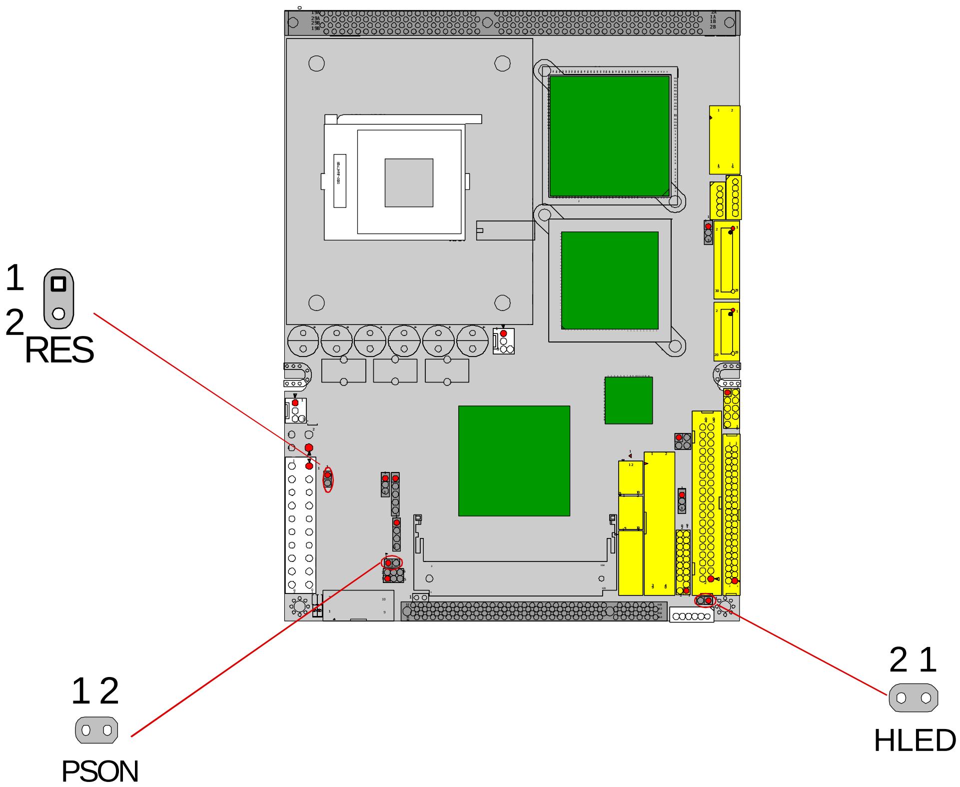
Connector : **Reset**

Type: onboard 2-pin header

Pin	Description
1	RES
2	GND

Connector : **HLED (IDE Activity LED)**
Type : onboard 2-pin header

Pin	Description
1	LED (+)
2	LED (-)



CPU Fan Connector

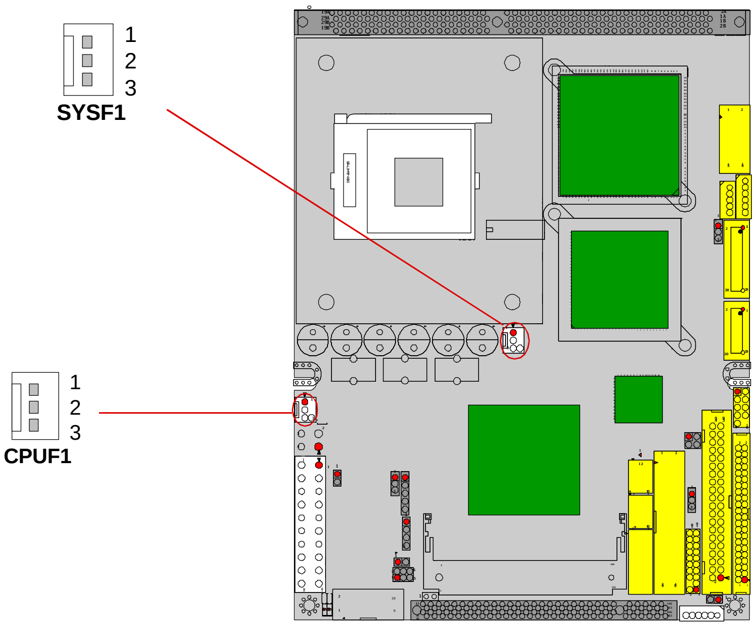
Connector : **CPUF1**
Type : onboard 3-pin wafer connector

Pin	Description
1	GND
2	+12V
3	FAN Dectect

System Fan Connector

Connector : **SYSF1**
Type : onboard 3-pin wafer connector

Pin	Description
1	GND
2	+12V
3	FAN Dectect

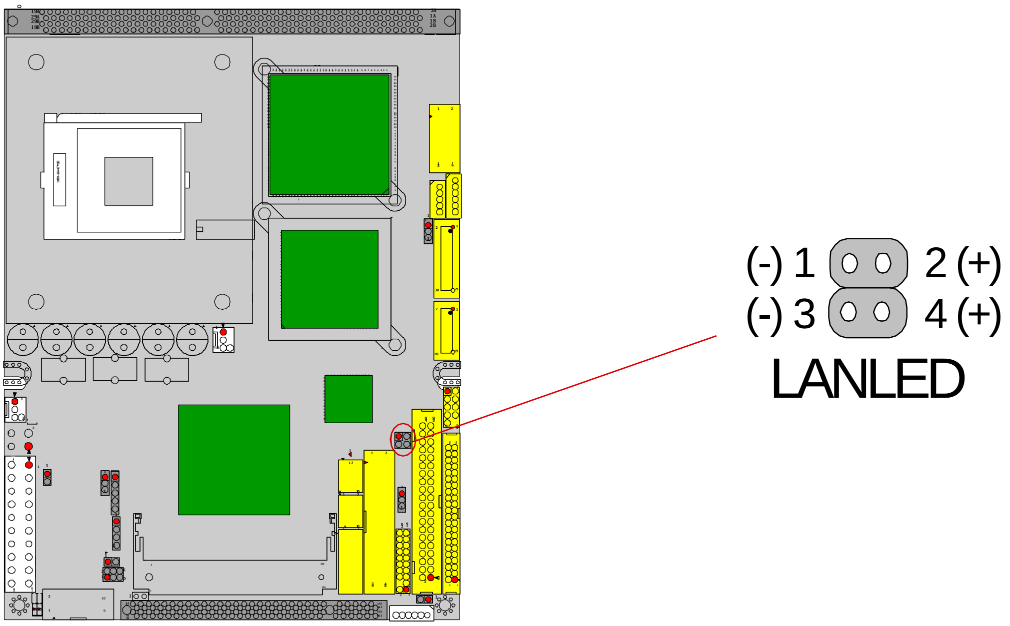


LAN LED Connector

Connector : LANLED

TYPE : Onborad 4-pin header

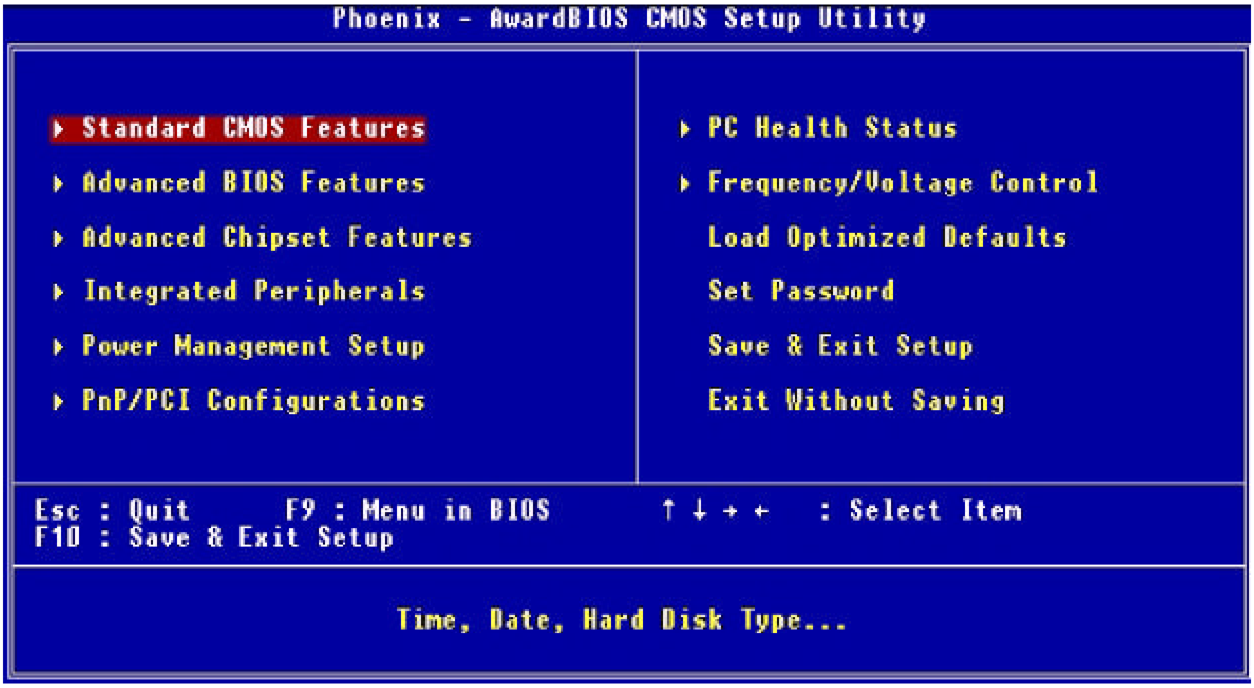
Pin	Description
1-2	Activity
3-4	Link



AWARD BIOS Setup

The SBC uses the Award PCI/ISA BIOS ver 6.0 for the system configuration. The Award BIOS setup program is designed to provide the maximum flexibility in configuring the system by offering various options which could be selected for end-user requirements. This chapter is written to assist you in the proper usage of these features.

To access AWARD PCI/ISA BIOS Setup program, press <Del> key. The Main Menu will be displayed at this time.



Once you enter the AwardBIOS™ CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and two exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

Setup Items

The main menu includes the following main setup categories. Recall that some systems may not include all entries.

Standard CMOS Features
Use this menu for basic system configuration.

Advanced BIOS Features
Use this menu to set the Advanced Features available on your system.

Advanced Chipset Features
Use this menu to change the values in the chipset registers and optimize your system's performance.

Integrated Peripherals
Use this menu to specify your settings for integrated peripherals.

Power Management Setup
Use this menu to specify your settings for power management.

PnP / PCI Configurations
This entry appears if your system supports PnP / PCI.

PC Health Status
This entry appears CPU temperature for the systemI.

Frequency/Voltage Control
Use this menu to specify your settings for frequency/voltage control.

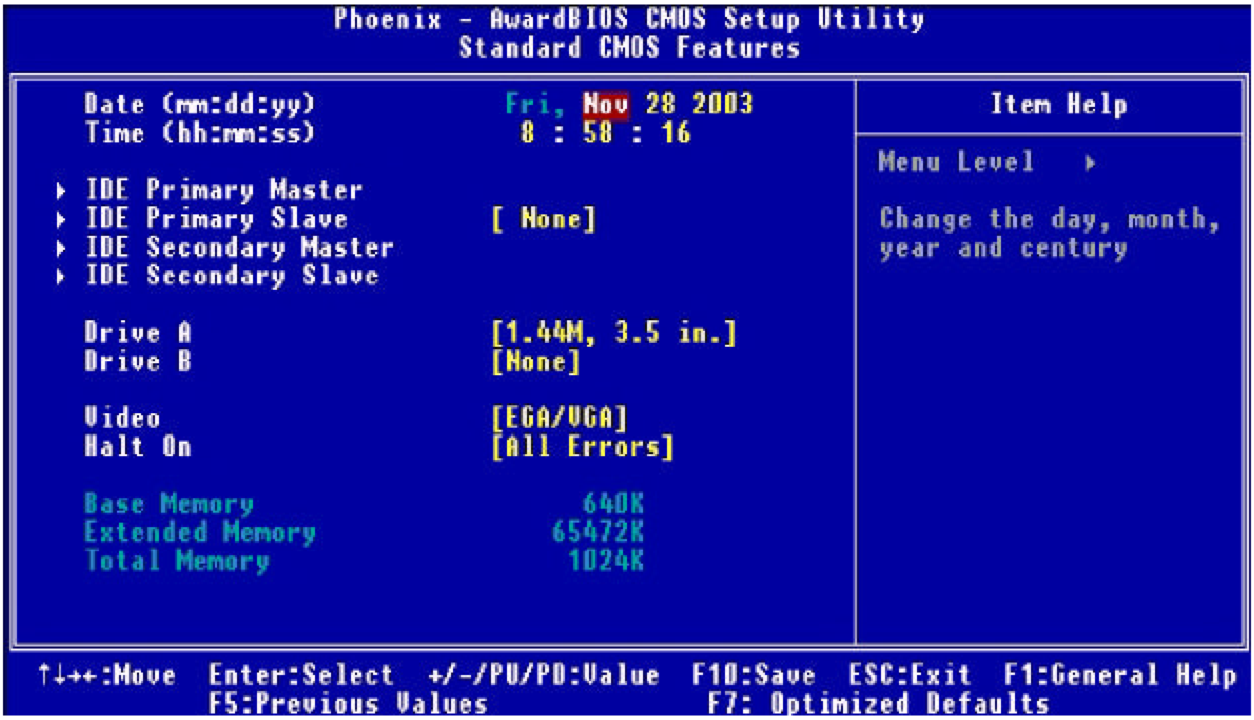
Load Optimized Defaults
Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While Award has designed the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs.

Set Password
Use this menu to set User and Supervisor Passwords.

Save & Exit Setup
Save CMOS value changes to CMOS and exit setup.

Exit Without Save
Abandon all CMOS value changes and exit setup.

Standard CMOS Setup



Date

The BIOS determines the day of the week from the other date information; this field is for information only.

Time

The time format is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Press the - or ¯ (key to move to the desired field . Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

IDE Primary & Secondary Master/Slave

Selecting "Manual" lets you set the remaining fields on this screen.
Select the type of fixed disk.

"User Type" will let select the number of cylinder, head, etc.

Note: PRECOMP=65535 means NONE!

[NONE]

Drive A, B
Select the correct specifications for the diskette drive(s) installed in the computer.

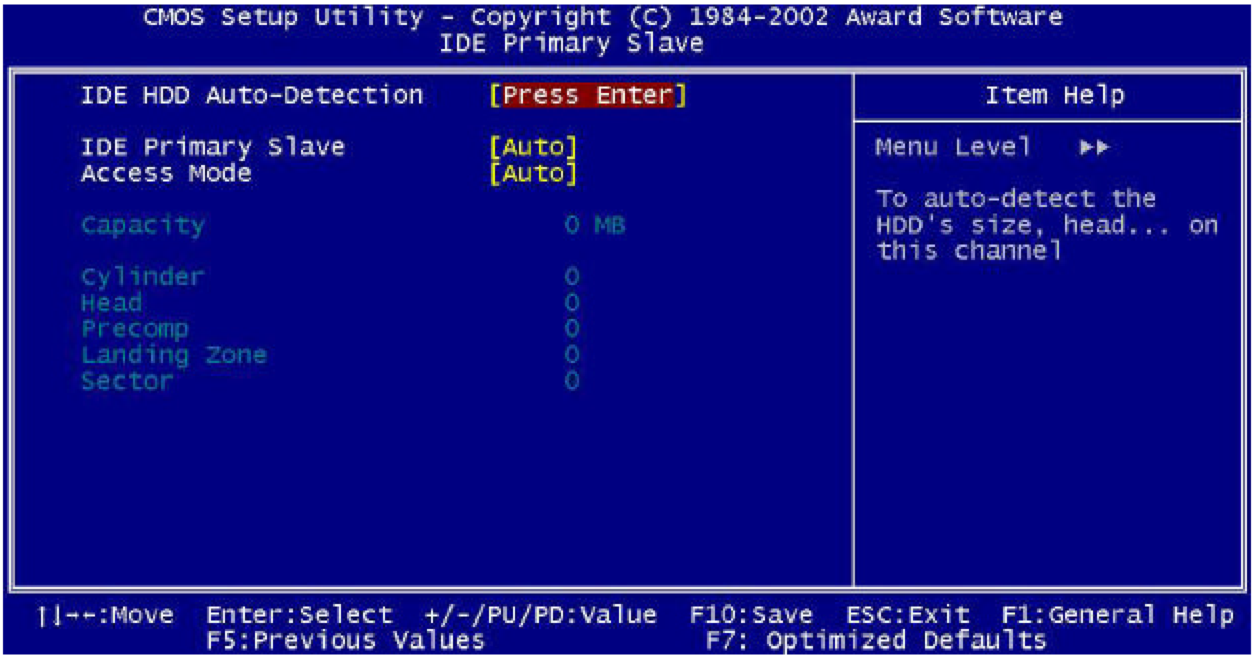
None :	No diskette drive installed
360K ;	5.25 in 5-1/4 inch PC-type standard drive
1.2M ;	5.25 in 5-1/4 inch AT-type high-density drive
720K ;	3.5 in 3-1/2 inch double-sided drive
1.44M ;	3.5 in 3-1/2 inch double-sided drive
2.88M ;	3.5 in 3-1/2 inch double-sided drive

Video Select the type of primary video subsystem in your computer. The BIOS usually detects the correct video type automatically. The BIOS supports a secondary video subsystem, but you do not select it in Setup.

Halt On During the power-on self-test (POST), the computer stops if the BIOS detects a hardware error. You can tell the BIOS to ignore certain errors during POST and continue the boot-up process. These are the selections:

No errors	POST does not stop for any errors.
All errors	If the BIOS detects any non-fatal error, POST stops and prompts you to take corrective action.
All, But Keyboard	POST does not stop for a keyboard error, but stops for all other errors.
All, But Diskette	POST does not stop for diskette drive errors, but stops for all other errors.
All, But Disk/Key	POST does not stop for a keyboard or disk error, but stops for all other errors.

IDE HDD AUTO DETECTION



IDE HDD Auto-detection
Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.

IDE Primary Master
Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !

Capacity
Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.

Access Mode
Normal, LBA, Large or Auto Choose the access mode for this hard disk

The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual'

Cylinder Min = 0 Max = 65535
Set the number of cylinders for this hard disk.

Head Min = 0 Max = 255
Set the number of read/write heads

Precomp Min = 0 Max = 65535
**** Warning: Setting a value of 65535 means no hard disk

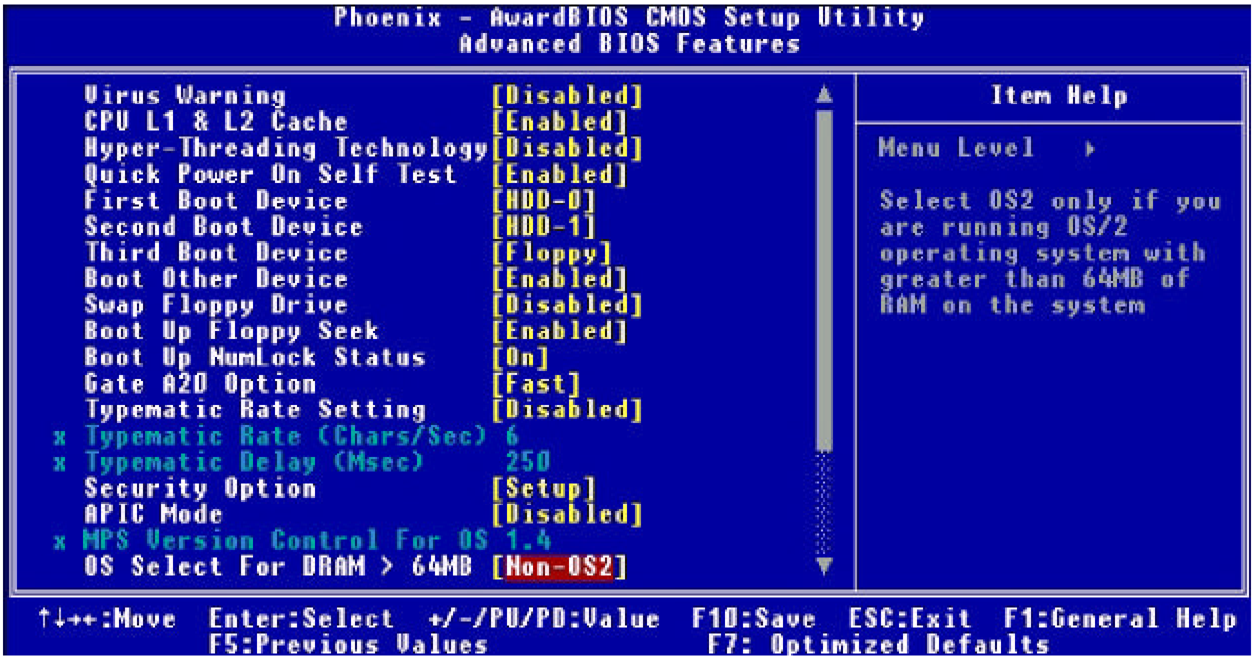
Landing zone Min = 0 Max = 65535
**** Warning: Setting a value of 65535 means no hard disk

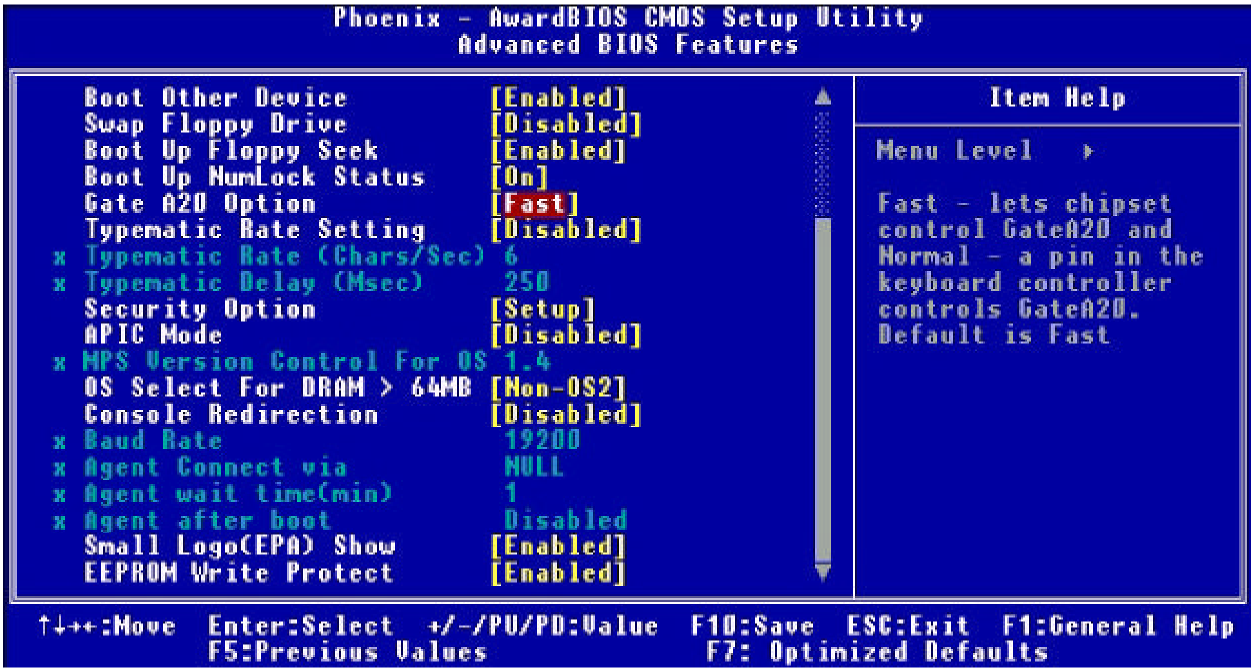
Sector Min = 0 Max = 255
Number of sectors per track

We recommend that you select Type "AUTO" for all drives. The BIOS will auto-detect the hard disk drive and CD-ROM drive at the POST stage.

If your hard disk drive is a SCSI device, please select "None" for your hard drive setting.

Advanced BIOS Features





Virus Warning ---> Allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning mes sage on scrning message on screen and alarm beep.

CPU L1 & L2 Cache ---> Cache memory is additional memory that is much faster than

conventional DRAM (system memory). CPUs from 486-type on up contain internal cache memory, and most, but not all,

modern PCs have additional (external) cache memory.

When the CPU requests data, the system transfers the request ed data from the main DRAM into cache memory, for even faster access by the CPU.

Extrnal Cache ---> Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPUs from 486-type on up contain internal cache memory, and most, but not all, modern PCs have additional (external) cache memory.

When the CPU requests data, the system transfers the request ed data from the main DRAM into cache memory, for even faster access by the CPU.

Quick Power On Self Test ---> Allows the system to skip certain tests while booting. This will decrease the time needed to boot the system.

Fist Boot Device ---> Select Your boot Device Priority.

Second Boot Device ---> Select Your boot Device Priority.

Third Boot Device ---> Select Your boot Device Priority.

Boot Other Device ---> Select Your boot Device Priority.

Swap Floopy Seek ---> If the system has two floopy drives, choose enable to assign physical drive B to logical drive A and vice-versa.

Boot Up Floopy Seek ---> Enabled tests floppy drives to determine whether they have 40 or 80 tracks.

Boot Up NumLock Status ---> Selects power on state for NumLock.

Gate A20 Option ---> Fast - lets chipset control GateA20 and Normal a pin in the keyboard controller controls GateA20.

Default is Fast

Typematic Rate Setting ---> Keystrrokes repeat at a rate determined by the keyboard controller when enabled, the typematic rate and typematic delay can be selected.

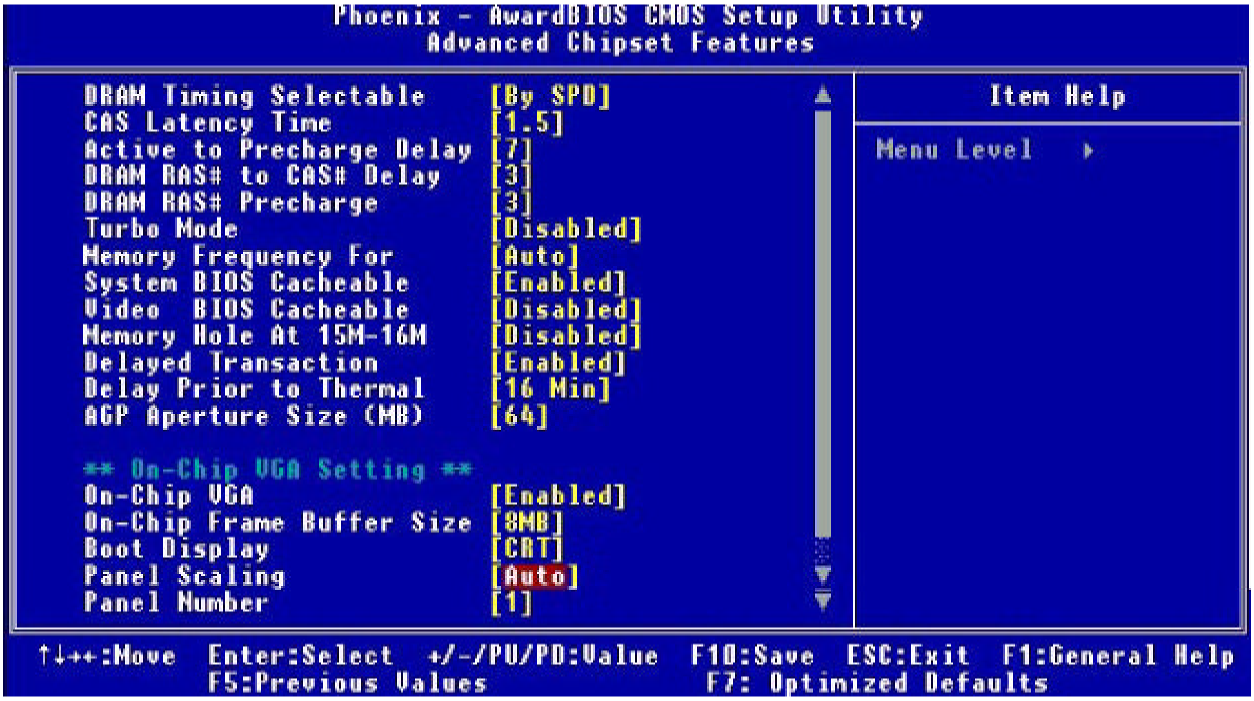
Security Option ---> Select whether the password is required every time the system boots or only when you enter Setup.

APIC Mode ---> Setting it to Enabled is to extend the number of IRQ.

OS Select For DRAM > 64MB ---> Select OS2 only if you are running OS/2 operating system with greater then 64MB of RAM on the system.

Small Logo(EPA) Show ---> Select Enabled if your system has a small Logo(EPA) show If you has no small logo show, select Disabled in this field.

EEPROM Write Protect ---> Select Enabled to prevent EEPROM text screen from being changed when the display is not in configuration mode.



DRAM Timing Selectable
When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on DRAM timing.

The choices: By SPD (default), Manual

CAS Latency Time
When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer.

Active to Precharge Delay
Delay that results when two different rows in a memory chip are addressed one after another.

DRAM RAS# to CAS# Delay

When RAS is asserted, there must be a small wait before the CAS can be pulled. This setting controls length of the wait. Like CAS latency, it's a delay before you get your data, so while your system is faster at a lower setting, it's also more stressful at that setting. Your RAM may handle it, or it may not.

DRAM RAS Precharge

The third part of the x-y-z notation used in SDRAM, the other two being CAS and RAS to CAS. Like its brethren, it's better lower but also more stressful lower. See the pattern 2.5 is only available with DDR.

Turbo Mode

Memory Frequency For

Lets you set the frequency of the DDR memory if needed. The setting ranges from

DDR266, DDR320, DDR400 and Auto, giving an ample array of options most useful when overclocking the system.

System BIOS Cacheable
Allows the system BIOS to be cached for faster system performance.

Video RAM Cacheable
This item allows you to "Enabled" or "Disabled" on Video RAM Cacheable.

Memory Hole At 15M-16M

If you enable this feature, 1MB of memory (the 15th MB) will be reserved exclusively for the ISA card's use. This effectively reduces the total amount of memory available to the operating system by 1MB. If you disable this feature, the 15th MB of RAM will not be reserved for the ISA card's use. The full range of memory is therefore available for the operating system to use. However, if your ISA card requires the use of that memory area, it may then fail to work.

Delayed Transaction
The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.1.

Delay Prior to Thermal

Controls the activation of the Thermal Monitor's automatic mode. It allows you to determine when the Pentium 4's Thermal Monitor should be activated in automatic mode after the system boots. For example, with the default value of 16 Minutes, the BIOS activates the Thermal Monitor in automatic mode 16 minutes after the system starts booting up.

AGP Aperture Size
Options : 4, 8, 16, 32, 64, 128, 256

This option selects the size of the AGP aperture. The aperture is a portion of the PCI memory address range dedicated as graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without need for translation. This size also determines the maximum amount of system RAM that can be allocated to the graphics card for texture storage.

AGP Aperture size is set by the formula : maximum usable AGP memory size x 2 plus 12MB. That means that usable AGP memory size is less than half of the AGP aperture size. That's because the system needs AGP memory (uncached) plus an equal amount of write combined memory area and an additional 12MB for virtual addressing. This is address space, not physical memory used. The physical memory is allocated and released as needed only when Direct3D makes a "create non-local surface" call.

On-Chip VGA

If your system contains a VGA controller and you want to activate it, select Enabled. The next option will become available.

On-Chip Frame Buffer Size

The On-Chip Frame Buffer Size can be set to 1MB or 8MB. This memory is shared with system memory.

Boot Display

This option let you select the display devices.

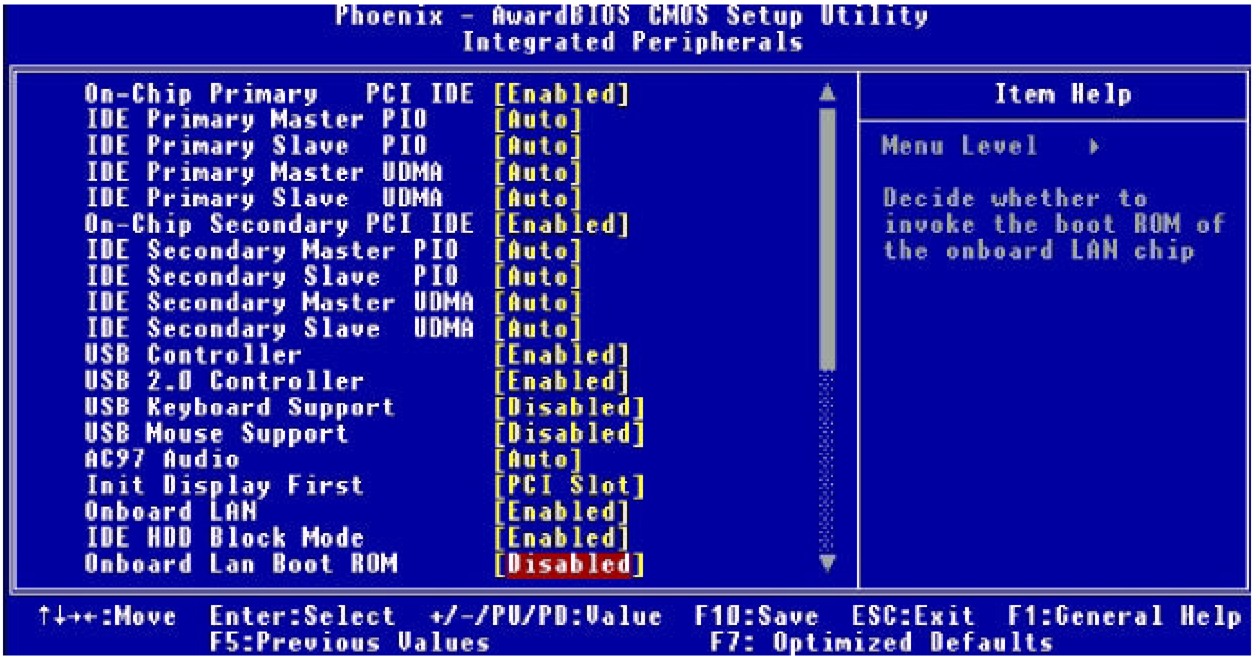
Panel Scaling

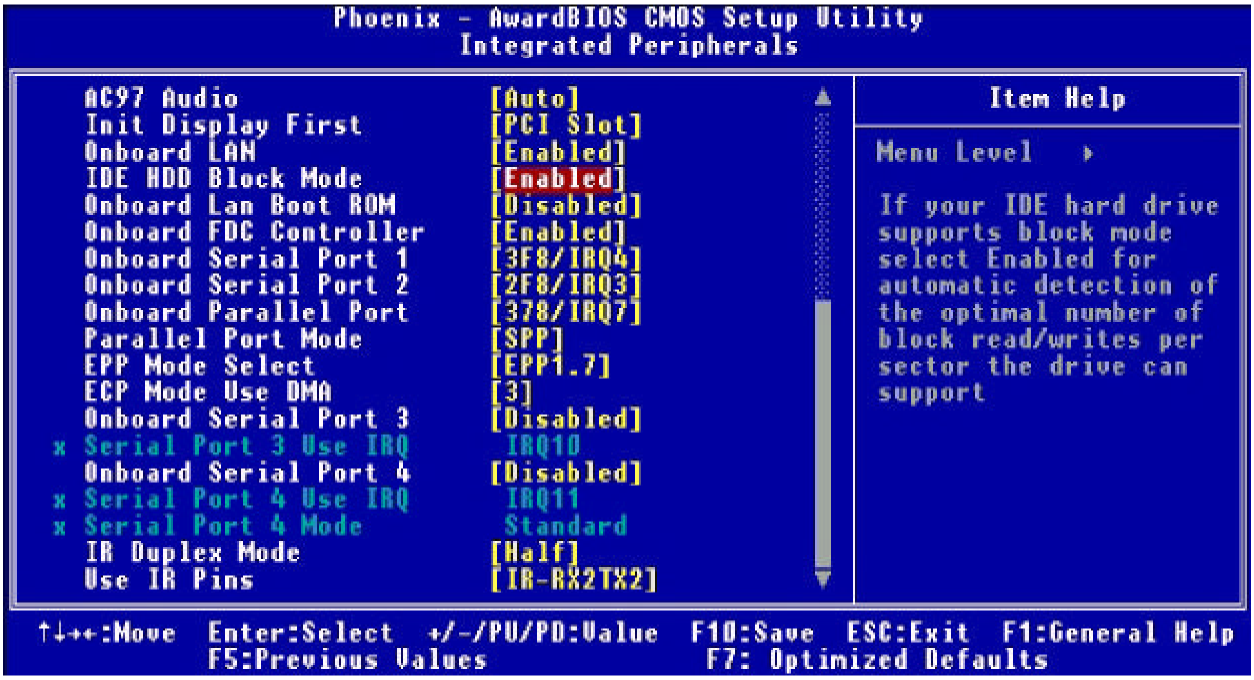
Setting this field to choose the initial state of Panel Fitting. A new state will overwrite the initial state and be remembered if Panel Fitting Hotkey is requested. Panel Fitting can only be enabled when in LFP only display. This panel fitting state is checked to update the hardware status after changing Video mode or Switching Display devices.

Panel Number

This option let you select the type of panel.

Integrated Peripherals





OnChip Primary / Secondary PCI IDE
The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately.

Primary & Secondary Master/Slave PIO
These four PIO fields let you set a PIO mode (0-4) for each of four IDE devices.

When under "Auto" mode, the system automatically set the best mode for each device

Primary & Secondary Master/Slave UDMA
When set to "Auto" mode, the system will detect if the hard drive supports Ultra DMA mode.

USB Controller
Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals.

USB 2.0 Controller
Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have USB 2.0 peripherals.

USB Keyboard Support
Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

USB Mouse Support
Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB mouse.

AC97 Audio
AC97 Audio selection.

Init Display First
This item allows you to decide to activate whether PCI slot or on-chip VGA first

Onboard LAN---> Select "Enabled" if your system contains onboard LAN supports.

IDE HDD Block Mode --->

Block mode is also called block transfer, multiple commands, or multiple sector read/ write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

Onboard Lan Boot ROM---> The default setting is "Disabled" that to shorten the booting time.

Onboard FDC Controller --->

Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install an add-in FDC or the system has no floppy drive, select Disabled in this field.

Onboard Serial Port 1 --->

Select a logical COM port name and matching address for the first and second serial ports. Select an address and corresponding interrupt for the first and second serial ports.

Onboard Serial Port 2 --->

Select a logical COM port name and matching address for the first and second serial ports. Select an address and corresponding interrupt for the first and second serial ports.

Onboard Parallel Port --->

Select a logical LPT port address and corresponding interrupt for the physical parallel port.

Parallel Port Mode ---> Select an operating mode for the onboard parallel (printer) port. Select Normal, Compatible, or SPP unless you are certain your hardware and software both support one of the other available modes. For information about parallel port

modes, see http://www.fapo.com/1284int.htm

EPP Mode Select
You can use this feature to choose which version of EPP to use. For better performance, use EPP 1.9. But if you are facing connection issues, try setting it to EPP 1.7. Most of the time, EPP 1.9 will work perfectly well.

ECP Mode Use DMA
By default, the parallel port uses DMA Channel 3 when it is in ECP mode. This works fine in most situations.

Onboard Serial Port 3 --->

Select a logical COM port name and matching address for the third serial ports. Select an address and corresponding interrupt for third serial ports.

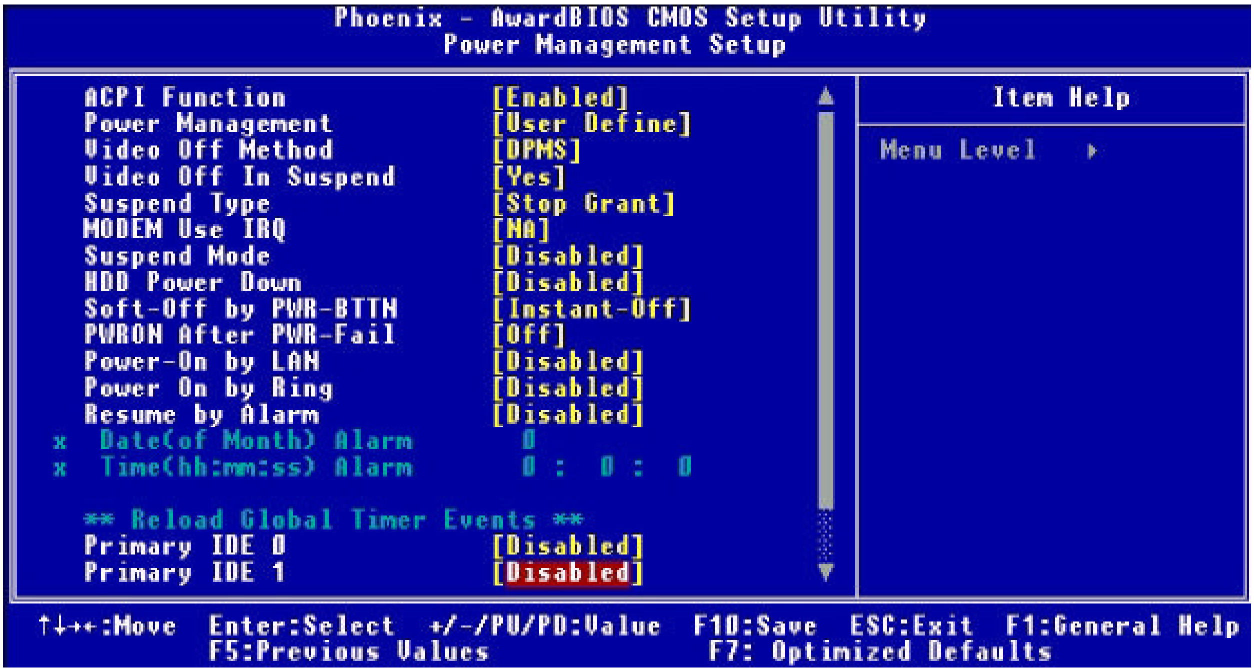
Onboard Serial Port 4 --->

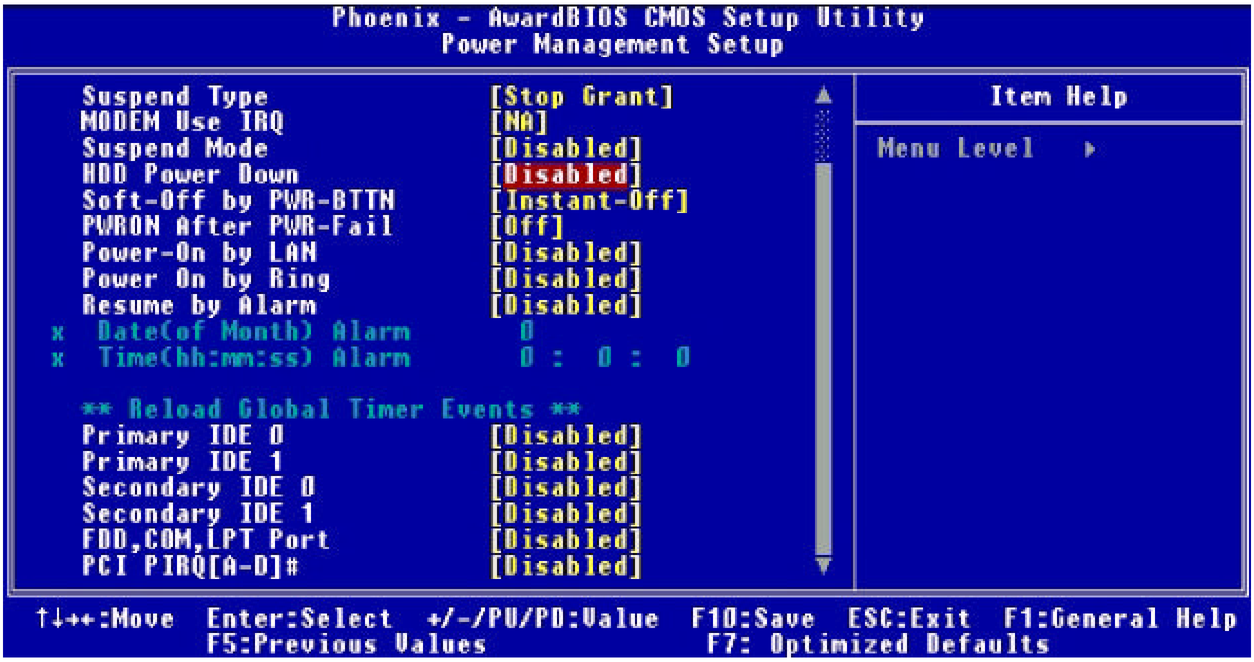
Select a logical COM port name and matching address for the fourth serial ports. Select an address and corresponding interrupt for fourth serial ports.

IR2 Duplex Mode
This item allows you to select the IR half/full duplex function.

Use IR Pins
This item allows you to select IR transmission routes, IR-Rx2Tx2, RxD2 and TxD2.

Power Management Setup





ACPI Function

Select Enabled only if your computer's operating system supports ACPI (the Advanced Configuration and Power Interface) specification. Currently, Windows 98 and Windows2000 support ACPI.

Power Management

There are 6 selections for Power Management, 3 of which have fixed mode :

PM Control by APM — If Advanced Power Management (APM) is installed on your system, selecting Yes gives better power savings.

Video Off Method
This determines the manner in which the monitor is blanked.

Video Off In Suspend

Controls what causes the display to be switched off
Suspend -> Off　　Always On　　All Mode -> Off

Suspend Type
S1 (POS)　Power On suspend
All devices are powered up except for the clock synthesizer. The Host and PCI clocks are inactive and PIIX4 provides control signals and 32-kHz Suspend Clock (SUSCLK) to allow for DRAM refresh and to turn off the clock synthesizer. The only power consumed in the system is due to DRAM Refresh and leakage current of the powered devices. When the system resumes from POS, PIIX4 can optionally resume without resetting the system, can reset the processor only, or can reset the entire system. When no reset is performed, PIIX4 only needs to wait for the clock synthesizer and processor PLLs to lock before the system is resumed. This takes typically 20 ms.

S3 (STR) Suspend To RAM
Power is removed from most of the system components during STR, except the DRAM. Power is supplied to Suspend Refresh logic in the Host Controller, and RTC and Suspend Well logic in PIIX4. PIIX4 provides control signals and 32-kHz Suspend Clock (SUSCLK) to allow for DRAM refresh and to turn off the clock synthesizer and other power planes.

Modem Use IRQ
Name the interrupt request (IRQ) assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system.

Suspend Mode
When the suspend mode has been enabled after the selected period of system inactivity, all devices except CPU will be shut down.

HDD Power Down

After the selected period of drive inactivity, the hard disk drive powers down while all other devices remain active.

Soft-Off By PWR-BTTN
The field defines the power-off mode when using an ATX power supply. The Instant-Off mode means powering off immediately when pressing the power button. In the Delay 4 Sec mode, the system powers off when the power button is pressed for more than four seconds or places the system in a very low-power-usage state, with only enough circuitry receiving power to detect power button activity or resume by ring activity when press for less than four seconds. The default is 'Instant-Off'.

PWRON After PWR-Fail

Setting whether system powers on after power failure.

Power-ON by LAN
There are two options can be selected: [Enabled] & [Disabled].

Power-ON by Ring
There are two options can be selected: [Enabled] & [Disabled].

Resume by Alarm

Allows your system to turn on at a pre-selected time.

Primary IDE 0/1

Select "Disabled" to turn off Primary IDE.

Secondary IDE 0/1

Select "Disabled" to turn off Secondary IDE.

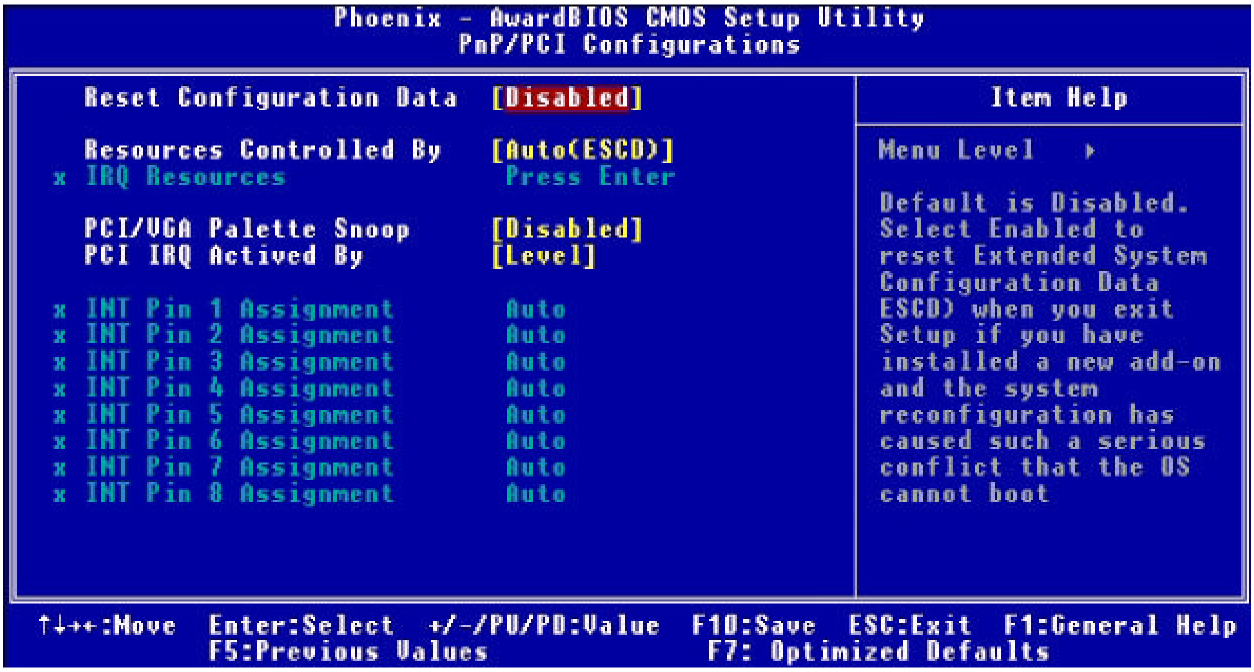
FDD,COM,LPT Port

Select "Disabled" to turn off these I/O.

PCI PIRQ[A-Q]#

Enabled or Disabled PCI,PIRQ[A-D]#IRQ status.

PnP/PCI Configurations



This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components.

Reset Configuration Data
Normally, you leave this field Disabled. Select Enabled to reset ESCD (Extended System Configuration Date) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system cannot boot.

Resource Controlled By
The Award Play and Play BIOS can automatically configure all the boot and Plug-and-Play compatible devices. If you select Auto, all the interrupt request (IRQ) and DMA assignment fields disappear, as the BIOS automatically assigns them.

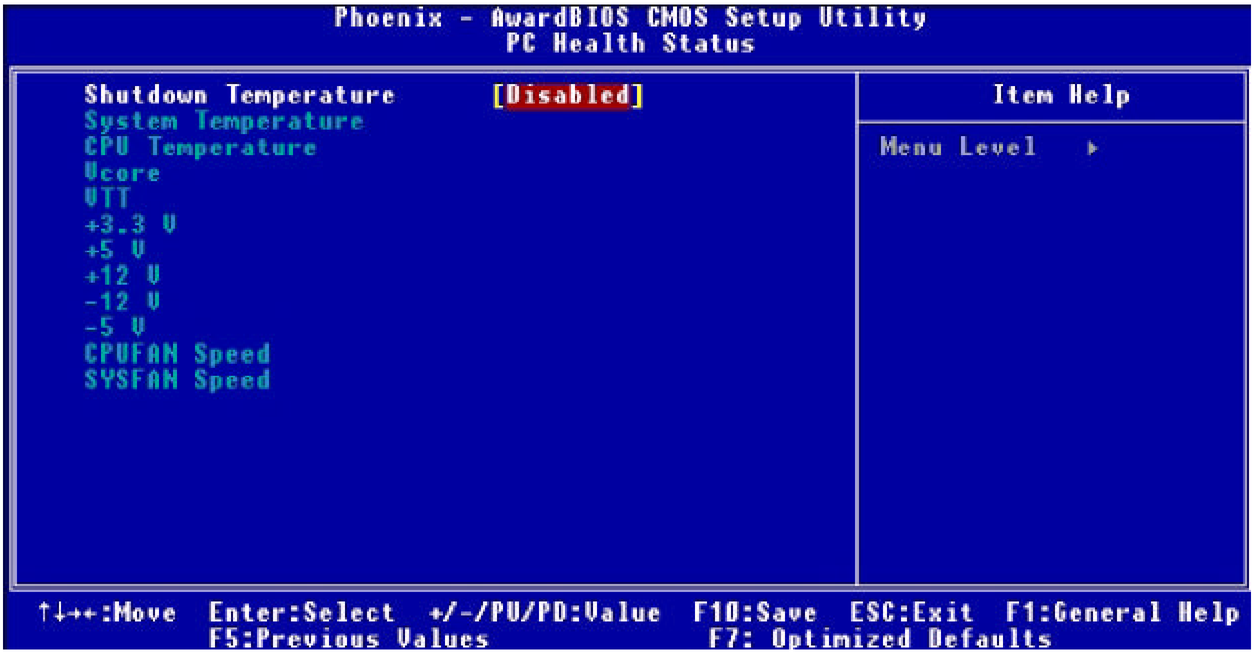
PCI/VGA Palette Snoop
Normally this option is always Disabled! Nonstandard VGA display adapters such as overlay cards or MPEG video cards may not show colors properly. Setting Enabled should correct this problem. If this field set Enabled, any I/O access on the ISA bus to the VGA card's palette registers will be reflected on the PCI bus. This will allow overlay cards to adapt to the changing palette colors.

PCI IRQ actived By
The default value is [Level].

Level PCI IRQ actived by Level.

Edge PCI IRQ actived by Edge.

PC Health Status



This section describes CPU tempeare for the system.

Shutdown Temperature
This item allows you to set up the CPU shutdown Temperature. This item only effective under windows 98 ACPI mode.

System Temperature
This field displays the current system temperature.

CPU Temperature
These fields display the current CPU temperature, if your computer contains a monitoring system.

Vcore
These fields display the current voltage of up to seven voltage input lines, if your computer contiains a monitoring system.

VTT
One type of CPU voltage

+3.3V, +5V, +12V
Show you the voltage of +3.3V, +5V, +12V

CPUFAN Speed
These fields display the current speed of up to three CPU fans, if your computer contains a monitoring system.

System FAN Speed
Show you the current SystemFAN operating speed